ARCHAEOLOGY and HISTORY

Early Settlements in the Andaman Islands

Zarine Cooper

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ARCHAEOLOGY AND HISTORY

Early Settlements in the Andaman Islands

This pioneering study is the result of extensive surveys on early human settlements in the Andaman Islands. Combining the methods of archaeology and ethnography, it blends insights from oral traditions that endure in these islands with a rigorous scientific approach — radiocarbon dating of shell middens indicating the presence of camping sites over two thousand years old; the mapping of abandoned Onge encampments on Little Andaman Island; and excavations in a large limestone cave on Baratang Island.

The author pieces together evidence from these surveys and excavations to provide an insight into the life of the people of the archipelago and the history of communication networks in the Bay of Bengal. Cooper's effort to unravel the cultural geography of the islands is uniquely complemented by the perceptions of the Andaman Islanders themselves. The study emphasizes the historical importance of the Indian Ocean as the vortex of cultural change and also highlights contemporary concerns. In doing so, it raises some crucial questions of ethnicity and tribe, identity and national heritage, tribal welfare and the impact of government policy.

This carefully argued and well-illustrated volume will be invaluable for anthropologists, historians, ethnographers, museologists, civil servants, policy analysts, and the general reader interested in the cultural history of island communities throughout the world.

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Preface

This book brings together data published in a series of papers, each of which deals with different aspects of the archaeological record in the Andaman Islands. The issues relevant to the investigations carried out from 1985 to 1992 are as wide ranging as the origins of the Andaman Islanders themselves, the history of early contact, the processes of site formation, and the dimensions of time and space defining human adaptation in this tropical environment. In collating this information, a comprehensive picture of the current knowledge on Andaman archaeology has been provided, setting the trend, one hopes, for future inquiries.

I am grateful to the following academic journals for publishing my research papers (for details, see the bibliography): *Antiquity*, *Asian Perspectives*, *Australian Archaeology*, *Indo-Pacific Prehistory Association Bulletin*, *South Asian Studies*, *World Archaeology*, *Bulletin of the Deccan College Post-graduate and Research Institute*, and *Man and Environment*. The following scholars invited me to contribute to the monographs (one article in each) that they have edited: Drs Betty Meehan and Neville White (*Hunter-Gatherer Demography: Past and Present*); Dr Bridget Allchin (*Living Traditions: Studies in the Ethnoarchaeology of South Asia*); H.P. Ray and J.F. Salles (*Tradition and Archaeology: Early Maritime Contacts in the Indian Ocean*).

This has also been an opportunity for addressing the sensitive issue concerning the future of the Andaman Islanders, taking into consideration the principal causes of the decline in their population and the circumstances in which they find themselves today.

For their generous support of this study, I wish to express my gratitude to the following institutions: the Homi Bhabha Fellowships Council, Mumbai; the Department of Science and Technology, New Delhi; the Indian Council of Historical Research, New Delhi; and the Ancient India and Iran Trust, Cambridge, U.K.

I am indebted to Dr Hema Achyuthan for her scientific expertise in our study of Andaman ceramics as well as of geological data. For providing radiocarbon dates special thanks are extended to Dr G. Rajagopalan of the Birbal Sahni Institute of Palaeobotany in Lucknow; Dr John Head of the Radiocarbon Dating Laboratory of the Australian National University in Canberra; and Dr Sheela Kusumgar of the Physical Research Laboratory in Ahmedabad.

I acknowledge with gratitude the help rendered by the following specialists: the molluscan remains were identified by Dr Phil Colman, Department of Invertebrate Zoology, Australian Museum, Sydney, and by Dr R.M. Badve of the Palaeontology Division, Maharashtra Association for the Cultivation of Science, Pune; Dr G.L. Badam of the Department of Archaeology, Deccan College, Pune, with the assistance of Dr Salahuddin, was responsible for identifying and analysing the vertebrate faunal remains; Dr Rosemary Gianno, who formerly worked in the Conservation Analytical Laboratory of the Smithsonian Institution, Washington, D.C., analysed a resin sample from Hava Beel Cave; Professor Sandra Bowdler, University of Western Australia, Perth, provided an insightful perspective on the technological characteristics of flaked glass tools and helped to write an article on this subject; Professor K.A.R. Kennedy of Cornell University, Ithaca, New York, provided useful comments on the subject of origins.

The anonymous readers of Oxford University Press India made many instructive and useful suggestions, for which I thank them.

Throughout my stay in the Archipelago, people were warm and friendly, often going out of their way to smooth the many difficulties that arose in the course of my work. Foremost among these friends was the late Captain Dennis A. Beale, without whose generous hospitality life in these islands would have been difficult and lonely. Equally valuable was the assistance rendered by Mr M.V. Babu, the courageous and upright officer of the Andaman Forest Department, and his wife Elizabeth. I also cherish the friendship of George and Dulcie Alley and their daughter Gilda.

The Onge of Little Andaman Island indulged my curiosity and clumsiness with infinite patience and good humour. This book is dedicated to them and to my parents, whose love and support have seen me through life.

Zarine Cooper

I

Introduction

The Andaman Islanders are important in South Asian and Indian Oceanic prehistory because their identification by some scholars as 'negritos' has provided the major support for a hypothesized early prehistoric settlement of the region. This volume reports findings of investigations that were primarily undertaken with the aim of elucidating the origins of the Andaman Islanders through multidisciplinary archaeological research in the Andaman Archipelago, as also with a view to delineating subsistence behaviour and culture history. The scope of my inquiry was largely determined by an assessment of earlier anthropological and archaeological work in the Andamans.

The Andaman Islanders have been the focus of a considerable amount of anthropological research by both Indian and European scholars. Today, the Islanders are represented by four groups, namely, the Jarawa (approximately 200 individuals) who are confined to a 'reserve' on the western coasts of the islands of Middle Andaman and South Andaman; the Sentinalese of North Sentinel Island (roughly 50 in number); the 70–80 Onge of Little Andaman Island; and the 30 Great Andamanese who, at present, live on Strait Island. These groups are the last of a population that comprised about 3000 individuals in the middle of the nineteenth century. Following the establishment of the British penal colony in 1858, major epidemics swept through these islands, severely disrupting, as a result, the lives of the Islanders.

During the early 1880s, when E.H. Man was officer in charge of the notorious 'Andamanese Homes' of the British penal colony

at Port Blair, he collected material on the Aka-bea and Akar-bale groups that inhabited the southern islands of the Andaman chain. This led to the publication of the monograph *On the Inhabitants of the Andaman Islands*, the first systematic and reliable account on this subject. To this work was appended a separate treatise by Man's collaborator A.J. Ellis, president of the Philological Society, titled *Report of Researches into the Language of the South Andaman Island*.

To M.V. Portman goes the dubious distinction of recording the decimation of the Andaman Islanders at the hands of the British (*The History of Our Relations with the Andamanese*, 1899). This account provides a better historical perspective than that of Man, as well as some useful information on the Islanders.

A.R. Radcliffe-Brown's classic monograph *The Andaman Islanders* (1922) has much to say about social organization and religion, though it is weak in the area of economic life. Some work on this topic has since been done by Indian scholars, especially Bose (1964) and Nigam (1963), while Pandya's study (1993) focuses on the cosmology and ritual practices of the Onge.

Archaeological investigations in these islands began almost as an afterthought of the anthropological inquiries that were set in motion during the nineteenth century. Thus, a few years after the establishment of the Port Blair penal settlement, J.C. Haughton collected chert flakes in the surrounding area, and these implements were exhibited by W. Theobald (1862) to the Asiatic Society of Bengal.

The first to excavate a midden in the Andamans was F. Stoliczka (1870), who investigated a site at Hope Town in South Andaman Island. During his visit to Port Blair, Louis Lapicque (1894) dug a trench in a 4 m-high midden at nearby Bamboo Flat. Although the report is without details, we learn that the labourers employed in the excavation work collected everything except shells, and deposited the material at Lapicque's feet (Lapicque 1894:364)!

Considerable excitement was generated by the discovery of seventeenth-century Sumatran gold coins in a shell mound at the Cadellganj barracks by Holland (1904 a, b), who writes that the site 'attracted attention on account of the presence in it of gold, in the hasty search for which most of the other valuable records were destroyed by the local authorities'.

No further work was undertaken until the early 1950s, when Lidio Cipriani investigated two middens near Beehive Hill on Middle Andaman Island (Cipriani 1955:252; 1966:71–4), and one

at Tamb-e-buie in Little Andaman Island (Cipriani 1954:73; 1966). The results were fascinating: two of the sites yielded human burials; and there was an absence of pottery in the lower horizons, as also a late appearance of pig bones. Although these findings were not supported by recent investigations, petrographic studies of potsherds from the Chauldari midden on South Andaman Island definitively confirmed what Cipriani had earlier suspected: that the quality of Andamanese pottery had steadily diminished over the past 2000 years (Cooper and Raghavan 1989).

While Cipriani published a number of reports which included brief descriptions of the sites and the excavated material, no comprehensive site report ever appeared, and no radiocarbon dates were ever processed. Perhaps this was due to Cipriani's untimely death (1962) after his return to Italy.

Under the auspices of the Anthropological Survey of India, P.C. Dutta excavated a site on Beehive Hill and a large midden at Chauldari (Dutta 1962; 1978). Both sites were considered to be of recent dating, the latter having pieces of iron, pottery, and pig bones in its lower levels. Again, excavation reports on these archaeological sites lack detail and there are no supporting C^{14} dates. Significantly, the Chauldari midden contained human bones (Dutta 1962:22).

More recently, a midden in the Mithakhari valley, on South Andaman Island, was excavated by S.B. Ota of the Archaeological Survey of India (*Indian Archaeology: A Review*; 1986–7:1–7). The nearest source of freshwater is the Mithakhari stream which, being perennial, probably accounts for the presence of seven middens in the valley.

The mound, which has been identified as Mithakhari V, overlies a rocky outcrop, measures about 23 m in diameter, and is 4.5 m high. The trench exposed a 2.1 m thick cultural deposit in which a sterile layer occurred approximately 65 cm below the surface. The sediments from this horizon, as well as from a lower one, indicate a break in the occupation of the site.

The variety and frequency of shells vary from layer to layer, the proportion of charred shells being relatively small. The other faunal remains include crab claws, fish bones, and a few fragmentary bones which have been tentatively identified as belonging to *Sus scrofa*.

Sherds of red ware were found in all the horizons. However, only four other artefacts were recovered, namely two shell points and two hammer stones. No further details have been published regarding this site, nor are any radiocarbon dates forthcoming.

Research Programme

In view of there being not a single C^{14} sample processed from any of the excavated sites, and given the possibility that the Andaman Islanders may have descended from relatively recent immigrants to the Archipelago, it was a matter of some priority to secure basal dates from test pits in a range of archaeological sites. If, on the other hand, settlement on the Archipelago is of great antiquity, it is probable that ancient cultural deposits can be found in rock shelters and caves. As limestone formations are ideal for the preservation of bone remains, the cave named Hava Beel, on Baratang Island, was selected for a preliminary examination.

Large shell middens are ubiquitous in the Islands and their presence is intimately tied in with local geomorphological and environmental conditions, such as proximity to shellfish beds and distances from shorelines, reefs, and freshwater supplies. The archaeological reconnaissance, therefore, took into account environmental factors that determine the preservation or disturbance of middens.

Within the orbit of a general reconstruction of culture history, there were two areas of particular interest: the development of the ceramic tradition and stone and glass technology. The study of the former was largely inspired by Cipriani's findings, as outlined above. From a combined ethnographic and archaeological perspective, however, the study of stone and glass artefacts offered an opportunity to examine their role in a hunter-gatherer society in regard to their manufacture and use.

As middens are rich in faunal remains, it would be possible to gauge the relative importance, in the local diet, of vertebrate animals, such as pig, and invertebrate ones, mainly shellfish. Whether the wild pig in the Andaman Islands originated from a domesticated strain is a puzzle that can only be resolved through the archaeological recovery of bones and their study by a zoologist.

As the survey progressed, questions arose as to how and when the Andaman Islanders acquired the art of manufacturing pottery, and the approximate time of the introduction of the outrigger canoe as a means of transport between islands. The problem obviously lay in the lack of knowledge of the nature and extent of the interaction between the Andamans and the neighbouring areas, namely the Nicobar Islands, Burma, Sumatra, and Malaysia. This prompted an

analysis of historical sources which, despite their limitations, indicate the nature of contacts with the Andaman Islands during the last two millennia (Chapter II).

The proposed project also provided scope for a study of the nature of midden accumulation and disturbance. This gave rise to questions relating to the definition of the Andaman Islanders' subsistence base, and their perspectives of the dimensions of space and time. In the end, the pursuit of these queries proved as challenging as the quest for the earliest traces of human habitation on these islands.

The Environmental Setting

The Archipelago comprises over 200 islands in the Bay of Bengal, and encompasses an area of about 6340 sq km (Fig. I.1). Luxuriant forests cover the hilly terrain which reaches a maximum elevation of 731.5 m. The climate is subtropical, the average temperature ranging between 27.4°C and 32.8°C. The mean annual precipitation is 3150 mm. The Islands experience both the north-east monsoon (October to December) and the south-west monsoon (May to October). The transition period marks the onset of stormy weather and the Andaman Sea 'becomes the breeding ground for tropical cyclones' (Lal 1976:16). Only the major islands of the chain are inhabited. The smaller outliers are visited by fishermen, most of whom are recent settlers from different parts of India. Former refugees from Bangladeşh have also made these islands their home.

The Andamans span the borderline betweein a truly equatorial (i.e. evergreen) vegetational association and a monsoonal (tropical deciduous) association. Rainfall decreases in absolute amount and increases in seasonality as one moves to the north. It is possible that on North Andaman a threshold is crossed and the forest becomes significantly more deciduous than that of any of the other islands.

Parkinson (1923) divides the vegetation into five distinct types, which include mangrove forests along the estuaries of creeks and along sheltered, muddy coasts. They form belts varying from a few metres to over a kilometre in width, and cover nearly one-tenth of the area of the Archipelago.

The most luxuriant forest is the giant evergreen found growing on the alluvial damp strips of land in the valleys, especially along

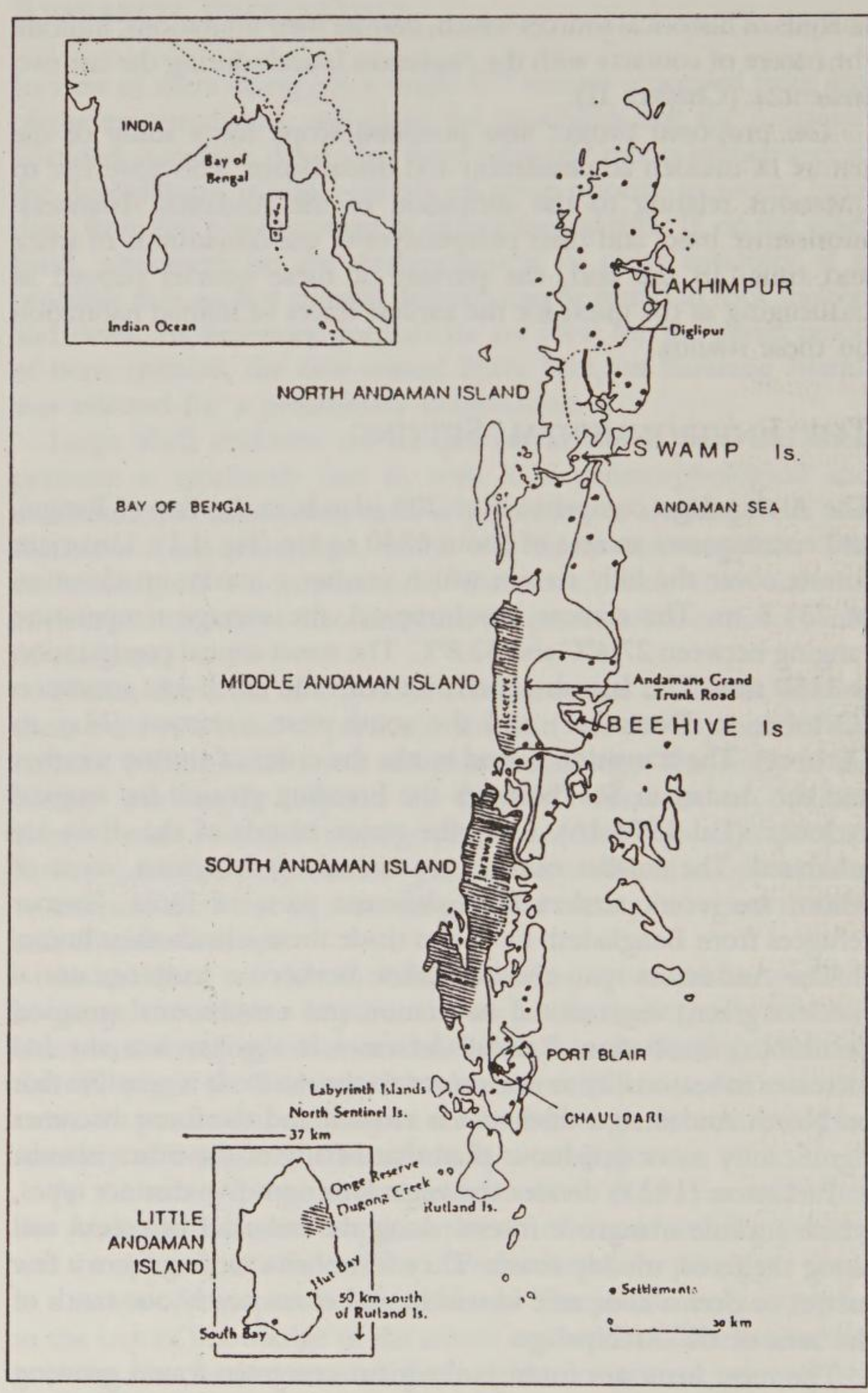

Fig. I.1. The Andaman Islands

the banks of larger streams or on the moist loamy fertile hills. Some of the lofty tree species found in the moist valleys are *Dipterocarpus alatus*, *Calophyllum soulattris*, *Artocarpus gomeziana*, and *Sterculia campanulata*. In addition, there are a variety of canes and climbers such as *Dinochloa andamanica* and *Gnetum scandens*.

Moist deciduous forests cover the lower slopes of hills up to an elevation of about 100 m and account for nearly half of the total area of the Andamans. The underlying rock is mainly coarse-grained sandstone, shale, and conglomerate, which results in a sandy or clayey loam of light yellow colour. Such soil is favoured by *Pterocarpus dalbergioides*, *Canarium euphyllum*, *Albizzia lebbek*, *Artocarpus chaplasha*, *Tetraneles nudiflora*, *Bambusa schizostachyoides*, *Acacia pennata,* and *Calamus* species.

Tropical evergreen forests clothe the parched and shallow-soiled slopes of the high hills. Deciduous trees are more common in this type of forest, some of the characteristic species belonging to the genus *Dipterocarpus*.

Twenty-seven species of mammals can be found in the Andamans. Of these, fifteen are endemic, including two species of shrew, seven species of bats, as well as a subspecies of civet cat (*Paguma larvata tytleri*) (Chaturvedi 1980:130). It is interesting to note that of the 242 species of birds that have been recorded by Tikader (1984), 95 are endemic.

The Andamanese wild pig is rather small, black, and maneless. According to Groves (1981:61–2), it has originated from *Sus vittatus* which occurs commonly in South-East Asia. However, for the present, the Andamanese pig may be identified as *Sus scrofa*, not *S. andamanensis* as it was formerly called. The report of a late appearance of *Sus* in Andamanese shell middens is discussed in Chapter VII.

The spotted deer (*Axis axis*) was introduced to the Andamans in the 1920s. Elephants were brought to the Islands by timber contractors, while dogs were introduced at the time of the establishment of the penal settlement.

The monitor lizard (*Varanus salvator andamanensis*) formed a part of the diet of the Andaman Islanders and its bones have been found in middens. Turtle meat has always been relished by the Islanders, who hunted species such as the green turtle (*Chelonia mydas*), Olive Ridley (*Lepidochelys olivacea*), hawksbill (*Evetmochelys imbricata*), and the leathery turtle (*Dermochelys coriacea*).

II

Early Communication Networks in the Bay of Bengal

Hitherto there had been no analysis of the external factors that could have influenced and shaped the social and economic structure of the various groups of Andaman Islanders, including their perspective on the outside world. The Andamans have, therefore, projected an impression of isolation, reinforced by images of savage tribes and stormy seas. Geographically, however, these islands are certainly not remote, for North Andaman is only about 300 km from southern Burma, while Little Andaman is situated within 120 km of the Nicobars. Moreover, both these archipelagos lie directly on the sea route connecting West Asia and India with South-East Asia. What then was the role of the Andaman Islands in the Bay of Bengal during the last few millennia? Were these islands uninvolved in and unaffected by the thriving commercial maritime traffic and the subsequent increase in piratical raids, or did they figure prominently in the historical record of this region?

These questions come to mind at the start of any archaeological inquiry. Hence prior to presenting the results of recent archaeological investigations, various sources of information, including travellers' accounts and reports of shipwrecks and of the trade in slaves are examined. The bringing together of various threads of evidence produces a coherent, if incomplete, picture of certain trends in oceanic communication within the Bay of Bengal.

A Question of Isolation

Given the geographical coordinates of the Andamans, it would be worth considering the implications of isolation as an attribute of islands and of insular societies. In this regard, it has been emphasized that isolation is not a causal factor in the biological, social, or economic development of an island society. It is a condition 'that varies from the near absolute isolation of truly remote islands to situations of great cosmopolitan coming and going' (Terrell 1986:122). Moreover, the concept of 'closed' systems associated with the social development of island communities is no longer valid. A case in point is that even on a remote Polynesian outlier such as Tikopia, social evolution reflects external linkages, over a period of 3000 years, with other south-west Pacific communities, some of which are at a distance of over 2000 km (Kirch 1986:41). In another instance, recent archaeological research has demonstrated definite links between the Izu Islands, which lie south of Tokyo, and Japan during the Jomon period (*c.*11,000–300 BC), and possibly earlier (Mark J. Hudson, pers. comm.). It is clear, therefore, that the ocean need not always be viewed as a barrier to communication but rather as a unifying factor (Hutton 1951:172).

Travellers' Accounts

The earliest mention of the Andaman Islands can be found in the writings of Claudius Ptolemy in the second century (Gerini 1897). In the Ptolemaic maps, which were not prepared by Ptolemy but by another cartographer, up to 1490 islands are shown on either side of the Malaysian Peninsula. Most of these islands were supposed to be inhabited by cannibals. Among these is the island of Aginnitai which has sometimes been identified as one of the Andaman Islands. Bazakota and the Island of Good Fortunehave been taken to signify the Great and Little Andaman Islands, respectively (Majumdar 1927:237; Yule 1929:310). However, Yule's idea of an Arab dual regarding the word 'Angamanain', as derived from Marco Polo's thirteenth-century narrative, is no longer tenable (Pelliot 1959:43). Moreover, there is no trace of Ptolemy's nomenclature, Aginnitai, in Polo's reference to Angaman, and the coincidence is most likely to be accidental (Pelliot 1959).

The Malay looked on the Andamanese (who were also known as *rakshasas*) as the descendants of Hanuman, one of the principal characters of the Ramayana (Portman 1899:19). In this regard, it is interesting to consider the possibility that the volcanic island of Narkondam, which lies to the east of the Andamans, derives its name from *narak*, meaning hell. This name probably stems from the belief of the Coromandel Brahmans that *rakshasas* or demons used to dwell in the Andamans (Yule 1929:312). The Malay 'Handuman' is obviously a deprecatory term for the so-called savage inhabitants of these islands, and has no bearing on the origin of the name by which these islands are known. Pelliot (1963:623) discounts an earlier theory, based on seventh-century Chinese texts, that the Nicobars were formerly inhabited by rakshasas. The area concerned probably lay no further west than the Malaysian Peninsula.

Arab notes on India and China, dating back to AD 851, provide a vivid though exaggerated description of the Andaman Islanders:

> The people on this coast eat human flesh quite raw; their complexion is black; their hair frizzled; their countenance and eyes frightful; their feet are very large and almost a cubit in length; and they go quite naked. They have no embarkations; if they had they would devour all the passengers they could lay hands on. [Renaudot 1733:4]

Scanty though the historical sources are, they consistently portray the Andaman Islanders as being implacably hostile. Thus the great Tanjore temple inscription of the eleventh century refers to these islands as Timaittivu, 'Islands of Impurity', inhabited by cannibals (Yule and Burnell 1968:29). According to this inscription, the Chola king Rajendra II conquered Car Nicobar and Great Nicobar, which were known to Indians as Kardipa and Nagadipa, respectively (Aiyangar 1923:350).

A fearful reputation such as this naturally gave rise to fanciful tales, none perhaps as imaginative as Marco Polo's account:

> Angamanain is a very large island. The people are without a king and are idolators, and no better than wild beasts. . . . all the men of this Island of Angamanain have heads like dogs, and teeth and eyes likewise; in fact, in the face they are all just like big mastiff dogs! They have a quantity of spices; but they are a most cruel generation, and eat everybody that they can catch, if not of their own race. They live on flesh and rice and milk, and have fruits different from any of ours. [Yule 1929:309]

It is obvious that Marco Polo had not actually visited the Andamans, but had merely coasted along the Nicobar Islands before heading west

for Ceylon (Olschki 1960:31). As regards his description of people with dog-like faces, it is probably reminiscent of cynocephali, which in those days were popularly associated with Indian marvels (Olschki 1960:153; Wittkower 1987:81).

In 1322, Friar Odoric mixed up several tales of this area and attributed cynocephalic tendencies to the inhabitants of Nicoveran (the Nicobars) (Yule 1916:97). Stories of cannibalism in the Andamans continued to be related by Nicolo Conti (*c.*1440) and by Master Caesare Frederike (*c.*1563) (Yule and Burnell 1968:29).

During his voyage to the East Indies from 1690 to 1691, Duquesne happened to pass the Andaman Islands and wrote that:

> the inhabitants are the most cruel and savage in the world, they neither trade nor correspond with any other whatsoever, not so much suffer any to land upon their coast, and if by chance they are so unhappy as to be driven upon't, these barbarous savages immediately kill them, and dress them for food. [Duquesne 1696:119]

While in Sumatra, Hamilton was given to understand that 'the Andamaners had a yearly custom to come to the Nicobar Islands,...and kill or take prisoners as many of the poor Nicobareans as they could overcome' (Hamilton 1739:66–7). The fact that in 1694 Hamilton had seen an Andamanese at Atchin (northern tip of Sumatra) who was supposed to have been rescued from a raid and thereafter made a slave, casts the first doubts on the belief that the Andaman Islanders were ferocious raiders (Hamilton 1739). Colebrooke (1795:389) is probably the first person to describe the Islanders as inoffensive, though he does refer to them as 'a race of men the least civilized, perhaps, in the world'. Subsequently, in 1863, Frederic Mouat provided the first reliable written account of these islands and their people. He made a pertinent remark, 'that when European settlers come to look upon the native neighbours with anything but a favourable eye, exaggerated reports are easily received (Mouat 1979:38).

Although most of the early reports were rather unreliable, the hostility of the Andaman Islanders towards strangers was a proven fact, and the fear evoked by the mere mention of this Archipelago was not entirely unwarranted. This was, however, a defensive stance which was provoked by numerous raids by the Malay, Burmese, Chinese, and others on the Islands for the purpose of capturing slaves. As victims of slavery, therefore, the aggressiveness of the Islanders is understandable. The attacks on any intruder or passer-by were, nevertheless, quite

fierce. For instance, in 1801 *The Asiatic Annual Register* (p. 1) reports the murder of part of the crew of a Chinese junk that was blown off the coast of Burma and eventually reached the Andamans. There were only six survivors who managed to make their way, with considerable difficulty, to the Coromandel coast.

In 1811, the captain of a brig and his boat's crew of five lascars 'were inhumanely murdered by the natives of Little Andaman' (*Selections from the Calcutta Gazette* 1868:260–1).

The Onge of Little Andaman experienced a sad loss of life in 1865 while attempting to prevent a ship's crew from landing on the Island for the purpose of replenishing their water supplies (Alexander 1827).

Dr J.W. Helfer, a young Austrian physician and naturalist, whose scientific curiosity impelled him to travel to the Andamans in 1840, was killed by the arrow of a native whom he was trying to approach (Nostitz 1878).

In 1790, during an early attempt by the British to open a settlement at Port Cornwallis in North Andaman, four Bengali fishermen, who formed part of the labour force, were murdered by the Andamanese (Temple 1900a:133).

In the light of these incidents, it is evident that the Andamans were not involved in the major commercial traffic of the Indian Ocean. Indeed, the islands seem to have been carefully avoided, especially before the sixteenth century, for fear of being attacked by the hostile Islanders.

Trade Routes and the Nicobar Islands

In attempting to determine the position of the Andamans on the commercial map of the Indian Ocean, it may be recalled that colonizing activity in the Bay of Bengal is not known to have begun until the Christian Era (Toussaint 1966:62). It may, however, have started much earlier (Hall 1964:12), and as Whitmore (1977:140) has indicated, the indigenous populations of South-East Asia are likely to have maintained loose contact with peoples of other areas even before foreign trade had begun to penetrate this area. Proof of early trade in this region has been provided by the archaeological site of Ban Don Ta Phet in west-central Thailand, which has been dated to 390 BC (Glover 1996:138). The excavated material includes beads and bronze vessels, which provide evidence of trade relations between India and

Thailand 2000 years ago (Glover 1996). The second century AD marked a period of ever-increasing maritime trade in the Bay of Bengal (Ray 1989).

Indian navigators travelling east generally crossed the Ten Degree Channel, which separates the Andamans and the Nicobars, or, alternatively, passed between the Nicobars and Sumatra (Chandra 1977:194). These sea routes were followed in order to avoid the notorious pirates of the Strait of Malacca (Chandra 1977).

As with the Andamans, one of the earliest allusions to the Nicobars is found in Ptolemy's (*c.* AD 200) map of this region (Gerini 1897). By the seventh century, several Chinese Buddhist monks had gone on pilgrimage to India, I-Ching being one of these monks. In AD 672 he left an account of his travels wherein he confuses the Andamanese with the Nicobarese, though he does mention that Indian traders venturing south-east dreaded encountering the so-called cannibals of the Andaman Islands (Chandra 1977:193). At this time, Chinese travellers sailing westwards from Canton generally stopped over at Palembang in Sumatra where they changed to ships leaving for Ceylon (Sri Lanka), the usual route being via the Nicobars (Chandra 1977:190).

The emperors of the Ming dynasty ruled China from 1368 to 1644, a period of unusual interest in the story of Chinese overseas expansion. The most comprehensive account of this period was written by Ma Huan, a Chinese interpreter who accompanied the famous envoy Cheng Ho on three of his major expeditions. Ma Huan's book, which dates back to 1433, gives a detailed description of Cheng Ho's routes (Mills 1970:22–7). Some of these did not differ much from the routes mentioned in earlier accounts, and at times involved a stay of three days at the Nicobar Islands, after which the ships crossed due west till they reached Ceylon (Mills 1970:18, 331). The Chinese referred to the Nicobars as the *Ts'uilan* mountains, or kingfisher-blue mountains, the inhabitants of which were said to live in caves (Mills 1970:124). Their nakedness was attributed to Sakyamuni Buddha having cursed them for stealing his clothes when he once visited this area (Mills 1970:125). The Andamans were called An-tu-man by the Chinese, though they were mentioned only in passing, and ships generally did not touch their shores (Mills 1970:124).

The Nicobarese are known to have practised a system of barter at a fairly early stage in the development of trade in this region. This fact is attested to by the Arabs who visited these Islands (referred to as *Lankhabalus*) in the ninth century for the purpose of obtaining

ambergris and coconuts in exchange for iron (Renaudot 1733:4). The ambergris from the Nicobars was apparently a much sought after item, as witnessed by Rashiduddin (*c*.1300) (Yule and Burnell 1968:625). According to Barbosa (*c*.1520), large quantities of this product were transported to the markets of Malacca and other places (Barbosa 1921:181). In this regard, it is interesting to note that the language of commerce throughout the Nicobars, after the sixteenth century, was a broken dialect of Portuguese (Temple 1900b:343).

Further insights into this pattern of trade are provided by Hamilton's (1739:71) report, according to which 'the people [Nicobarese] come thronging on board in their canoes, and bring hogs, fowl, cocks, fish, salted and dried yams, the best I ever tasted, potatoes, parrots and monkeys, to barter for old hatchets, sword-blades and thick pieces of iron-hoops'.

The proximity of Burma invariably meant that Burmese junks were attracted to the Nicobars (Man 1886:430). The significance of this exchange system in the economy of the Nicobarese is indicated by the practice of invoking the gods in order that they may be granted favourable trading conditions. Thus, at one of their feasts, the villagers of Mus in Car Nicobar were observed placing a miniature canoe on the beach, denoting the departure of Burmese vessels and their desire for the arrival of Muslim ships (Solomon 1902:211).

Till fairly recently the people of Chowra stored drinking water in large Chinese jars (Hutton 1931:10). These were probably obtained from the Chinese who frequented these waters for the collection of shells (Hutton 1931).

From the above descriptions it is clear that far from posing a threat to outsiders, real or imaginary, the Nicobarese encouraged trade and thereby remained within the sphere of maritime traffic, albeit in a peripheral situation, and the mainstream of commerce in the Bay of Bengal. The Nicobarese thus present a marked contrast with the Andamanese in terms of their somatological structure as well as their social and economic organization.

In a relatively self-sufficient society of hunters, gatherers, and fishermen such as that of the Andaman Islanders, economic pressures both within and outside the community were probably not so great as to render trade with other communities an absolute necessity. In this respect, they represent an insular society, cut off from the wider circle of social and economic development taking place in other regions. Moreover, their reputation for fierceness seems to have

created an almost insuperable communication barrier between them and the world at large.

Slavery and Piracy

As mentioned earlier, the implacable hostility of the Andaman Islanders towards all foreigners was the inevitable outcome of their being constantly preyed upon by Malay, Burmese, Chinese, and European pirates to satisfy the demands of the slave market. Although the evidence for such exploitation is negligible, it is worth taking into consideration so that the predicament of these island people can be better understood.

Although Man (1885:266) believed Hamilton's (1739:66) account of the Nicobarese having been taken prisoners by their neighbours in the Andamans, Portman (1899:23) thought that this was extremely improbable considering that the Nicobarese were capable of defending themselves, even against the Malays who were supposed to be better armed (Colebrooke 1795:133).

In 1789, Captain Archibald Blair met a Frenchman who claimed to have travelled in the ship that carried off two natives; one of them died of his wounds, while the other died a little later at Pondicherry (Temple 1900a:115). In 1791, an officer of a French merchant vessel was reported as offering natives from the Andamans for sale (Temple 1900a:120).

Portman (1899:116) reports that in 1819 a junk, manned by a mixed crew of Chinese and Burmese, went to the Andaman Islands to collect trepang or sea slugs. While engaged in this task, they were ambushed by a group of Islanders who were subsequently pursued, and two of them, a man and a boy, were taken captive (Portman 1899). The man, however, died of cholera, while the boy was taken to Penang where he served under Captain Anderson of the Bengal Army. The boy ultimately became an alcoholic and died of its effects (Portman 1899).

During a visit to Penang in 1859, Captain J.C. Haughton, the Superintendent of the settlement at Port Blair, learned that in about 1841, two Andaman Islanders were brought to Penang (Portman 1899:290). One of them had been captured by Malays, while the other, a woman, was found drifting helplessly in a canoe with some other members of her family (Portman 1899). Of all these people, only the woman survived, and was later kept as a servant by Mr Mitchell, the chief clerk of the police (Portman 1899:291).

In a report given by J.B.D. Rodyk, an old pensioner of the Penang settlement, it is stated that an Andamanese family consisting of a man, a woman, and two children were brought over from their native islands some time between the years 1838 and 1841 (Portman 1899:117). They were left in the custody of the police, soon after which all of them, except the girl, died of cholera and smallpox (Portman 1899).

According to Sir W.E. Maxwell, a former governor of the Gold Coast, the Malays had taken slaves from the Andamans over a long period of time (Portman 1899:19). These slaves formed a substantial part of the tribute paid by the Raja of Kedah to the ruler of Siam. The latter is known to have kept them in his court up to as late as 1860 (Portman 1899:12).

At this stage it would not be inappropriate to present a brief history of piracy in the region, with special reference to facts that serve to illuminate the instances of slavery mentioned above.

In the first place, it may be borne in mind that the Malay Peninsula and the Indonesian Archipelago have, from time immemorial, played an important role as a transition areas. The Malay Peninsula enjoyed the double advantage of being in a position to disrupt the flow of trade through piracy, and simultaneously to exploit the commercial possibilities by establishing coastal entrepôts (Hall 1977:213). Thus it is not surprising that Fa Hien, the Chinese traveller, sailing from Ceylon to Java in AD 414, mentions numerous pirates who were probably Malays (Hill 1923:12).

During the latter half of the thirteenth century, the commercial centre of Shrivijaya in Sumatra had degenerated into a pirate state which was ruled by Chinese corsairs (Meilink-Roelofsz 1962:18). The disintegration of Shrivijaya paved the way for the rise of Malacca on the Malay Peninsula (Meilink-Roelofsz 1962). The most faithful followers of the founders of the Malay dynasty seem to have been the Celates, who were proto-Malay pirates living along the coasts (Meilink-Roelofsz 1962:27).

In the latter half of the seventeenth century, Bowrey (1905:237) described the Celates as 'absolute pirates'. They were also referred to as 'Saleiters' who 'rob and take people for slaves and transport them to Atchin, and there make sale of them, and Jonkceylon often feels the weight of their depredations' (Hamilton 1739:68).

Far more notorious than the Celates were the pirates of Aru in Sumatra, who even the Portuguese could not control (Meilink-Roelofsz 1962:29–30). The Aruans, Celates, and the aggressive Orang Laut of

the Riau-Lingga islands supplied Malacca with able-bodied men and women who were much in demand in Siam (Meilink-Roelofsz 1962:30, 72). Many of these slaves were the Orang Asli, who are non-Muslim aborigines of the Malay Peninsula (Endicott 1983:217). Indeed, they were regarded as 'natural resource' of the forest (Endicott 1983:212).

In the seventeenth century, the Nicobars became the resort of a band of pirates who were mainly Dutch (Barbosa 1921:180). From about 1811 to 1822, an Englishman named William Worthington settled among the Nicobarese and took to plundering passing ships, including the brig *Hope*, the entire crew of which was murdered (Hill 1927:204). Not to be outdone by Worthington's exploits, the islanders of Camorta and Nancowry massacred the crews of six vessels touching at these islands between the years 1852 and 1854 (Singh 1978:45).

These reports prove beyond doubt that far from being the terror of these islands, the Andaman Islanders were invariably the helpless victims of their neighbours in Malaysia, Burma, and the Nicobars.

The numerous caves and caverns in the Andaman Archipelago are some of the favourite nesting places of the 'white-nest' swiftlet (*Collocalia fuciphaga inexpectata*) (Ali and Ripley 1983:267). The nests of these birds constitute a popular culinary delicacy among the Chinese and many other peoples of South-East Asia. In addition, the coasts of the Andamans abound in sea slugs which are regarded as a valuable food item, though not among the local inhabitants. These resources have always attracted numerous Malays, Burmese, and Chinese. It is not surprising, therefore, that Helfer during his visit to the Andamans in 1840, encountered two boats of Malays from Penang who had come in search of birds' nests (Nostitz 1878:244). He later saw four Malay boats whose crews were gathering periwinkles (Nostitz 1878).

In 1858, the British captured a Malay boat not far from Port Blair (Portman 1899:261). Apparently the Malays had received permission from Penang authorizing them to proceed to the Andamans for the purpose of collecting nests and sea slugs (Portman 1899).

It is obvious that these collectors were well acquainted with the topography of the Archipelago, for they knew of the caves in Middle Strait, in Middle Andaman, and had special names for the others (Portman 1899:346). For example, the cave at the southernmost extremity of Strait Island was known to the Malays as 'White Rock' (Portman 1899:515). Another birds' nest cave on South Button Island (one of the islands of the Ritchie's Archipelago) can only be 'entered from the summit of the island by sliding down the tendrils of a

Ficus. . . . This island has long been known to the Malays and Burmese as the 'Split Rock' (Belcher 1867: 44).

Malay and Burmese craft were often heavily armed, giving rise to the suspicion that when the opportunity arose, they engaged in piracy, attacking passing junks and kidnapping the inhabitants of the Andamans for slavery (Portman 1899:370).

During a survey of this area in 1771, Captain John Ritchie observed the fear of the Islanders at the sight of guns and commented 'they knew the use of them; and had, no doubt, been taught it in a manner that does no great honour to those who were their preceptors' (Temple 1901b:237).

The history of armed depredations on the Andamans may well have been a long one, though the only noteworthy archaeological evidence of external contact consists of two seventeenth century Sumatran gold coins that were found in a midden at the Cadellganj barracks in South Andaman (Holland 1904a:45). The coins were later identified at the British Museum and were ascribed to the Actien kingdom in North Sumatra.

It seems, then, that at least in late historical times, the vested interests of several nations reposed in the Andaman Islands. When viewed in this light, one cannot rule out the possibility that the myth of cannibalism was perpetuated by those who frequented the islands for edible swiftlets' nests in order to retain their monopoly (Yule 1929:311). Moreover, in the eighteenth century, the King of Savoy claimed sovereignty over the Andamans (Temple 1900a:125). It appears that in the process of consolidating their empires and taking full advantage of the growing commercial potential in this area, several nations may have desired to include the Andamans and the Nicobars within their permanent territorial possessions. Advances in the modes of oceanic communication would have certainly facilitated this process and helped in minimizing the scourge of piracy and the loss of life caused by shipwrecks. It was precisely with this aim in mind and with the intention of strengthening their position in the region that the British took control of these islands in the nineteenth century; at that time the setting up of a penal colony was of secondary importance (Portman 1899:186).

The Possibilities of Silent Trade

So far it has been possible to discern two major elements in the history of interaction with the Andaman Islanders: one was their deep-rooted

mistrust of strangers which required outsiders to exercise caution when approaching this area, and the other was the brazen exploitation of the Islanders by various opportunists.

This situation represents a historical irony which is by no means as simple as it first appears. A closer look reveals certain undertones which are reflected in two noteworthy encounters in the Andamans. The first one concerns two Andaman Islanders who were brought on board Captain John Ritchie's ship in order that they could be befriended (Temple 1901b:235). After overcoming their initial fear, the two men 'began to walk about and stare at everything in the vessel; the difference of colour between the Europeans and lascars was a matter that took up much of their attention' (Temple 1901b). A little later two more Islanders were persuaded to join their companions on the ship, and were given:

> coarse cloth to wrap round them; for these people were all stark naked, and when they seemed desirous of going into the canoes to their friends, they were permitted to do so; but they no sooner got into the canoes, that they threw the pieces of cloth into the old canoes that they were taken in; and leaving it behind, they pulled toward the shore with great swiftness. The old man and his comrade were still on board, nor did they seem under the least apprehension of being detained; but they laughed very heartily to see the others in such a fright. I gave them some nails, and bits of old iron, which pleased them much; and about three in the afternoon, they went into the canoe, and tried hard to pull the chain plates from the vessel's side. They went astern when this would not do, and dragged strongly, and long, at the rudder chains; but these were too well fixed; and at last, they went towards the shore at an easy rate, looking at their nails, and singing all the way. [Temple 1901b]

This incident took place in 1771, while Ritchie was surveying Diligent Strait which separates the main group of Andaman Islands from Ritchie's Archipelago.

Earlier mention has been made of Helfer's death at the hands of an Andaman Islander. What needs to be added is that this tragedy was caused by Helfer's overwhelming desire to communicate with the Islanders without adequately ascertaining whether he would be welcomed among them (Nostitz 1878:245). Initially, gifts of coconuts thrown from the ship were accepted by the Islanders. Thereafter, Helfer wrote in his diary that:

> we made him understand that we wanted water and he showed us where it was to be found. . . . My Malay captain took the savages a bowl of rice. The young man took it, and afterwards brought the bowl filled with fresh water.

One of my Malay boatmen jostled against them, and unfortunately the bowl was broken. After that the savages would not come near the boats any more, but only peeped at us from behind the rocks. [quoted in Nostitz 1878]

The following day, the Islanders did not appear willing to accept any gifts, and began to retreat into the forest. Not apprehending any danger, Helfer ventured ashore, only to be killed by a well-aimed arrow (Nostitz 1878:248).

The so-called 'savages' had obviously suspected foul play and had reacted accordingly. Perhaps the most significant aspect of this episode is that the Islanders did not resort to hostile measures immediately upon encountering strangers. Instead, they seemed willing to allow some interaction if they were approached in a manner that did not arouse their suspicion. Their caution under such circumstances was understandable, especially in view of their experiences of being kidnapped by Malays and others. Ritchie's comment regarding their fear of guns is pertinent in this regard.

These incidents suggest that a wider scope for interaction may have existed in the past between the people of the Andamans and those from adjacent areas. Before the intensification of piracy in this region, the Andaman Islanders may have enjoyed a greater measure of safety, which in turn could have produced conditions that were suitable for promoting links with those outside their own community. Assuming then that there was a time when slave raiding did not pose such a great threat, and outsiders could be trusted to some extent, there could well have been a more tolerant attitude towards foreigners, particularly those from neighbouring areas such as southern Burma and the Nicobars. Such an atmosphere would have been conducive to bridging inter-regional communication gaps, thus allowing culture contact, albeit to a limited degree. As a consequence, it is possible that a primitive system of barter might have prevailed within these archipelagos. This system could have taken the form of silent trade which involves the avoidance of personal contact between the parties engaged in such a pattern of exchange. Although there is no supporting evidence for such trade relations in the Andamans, their possible existence in the past needs to be taken into consideration, especially when attempting to comprehend the trends in inter-regional contact.

The speculative nature of this argument is partly compensated for by its implications in terms of providing a clue regarding the process whereby certain components of Andamanese material culture, such as ceramics, were incorporated into the economic structure. This is

assuming, of course, that the art of making pottery, which is similar to that practised by the Nicobarese (see Man 1894), was derived from the latter and was not an integral part of Andamanese culture when the first settlers reached these islands. Moreover, this stochastic approach constitutes another dimension of an investigation that has hitherto proceeded on the basis of facts gleaned from the historical records. Such an approach would be useful in widening the interpretative scope of archaeological and anthropological data obtained from this area in the future.

To return to the problem at hand, it seems that in a situation wherein sharp linguistic and cultural differences existed between the people of the Andamans and those in their neighbourhood, and in which there was the potential danger of slave raiding, the safest form of communication would have been silent trade.

> However, a difference of societies is not a sufficient cause for the form of silent trade rather than regular barter. Apparently it is a combination of differences, an extreme extension of social distance, in the presence of a strong desire to trade, that creates this institutional island of neutrality that is so similar to the 'port of trade' found in more advanced commerce. [Price 1967:75]

Such transactions were evidently characterized by a strong element of fear (Price 1967:75; Woodburn 1988:14). In this regard, Endicott (1983:228) considers it possible that the Semang of Malaysia resorted to this form of exchange in order to protect themselves from slave raiders.

Hunters and gatherers like the Agta of northern Luzon in the Philippines are also known to have had a fairly long history of symbiotic trade relationships with non-Agta communities (Griffin 1984:96). However, during their early contacts with the Christians in the lowlands, the Agta seem to have been too timid to allow relative strangers to approach them, for which reason the 'custom of secret barter prevailed among the Negritos' (Vanoverbergh 1925:431).

This brings to mind the reaction produced among the population of North Andaman during Blair's visit to the area in 1788:

> The island is inhabited by coffries who were so very timorous, that I could bring about no further intercourse with them than their acceptance of a few presents which they would not receive from our hands, but made signs for them to be put down on the beach, when they gladly accepted them. [Temple 1900a:108]

This brief meeting once again illustrates the fact that precautions were taken by the Islanders to maintain a safe distance between themselves and outsiders, even if the latter were bearers of gifts.

The Moken of the Mergui Archipelago, near southern Burma, are semi-nomadic boat people who at one time used to subsist mostly on shellfish and turtle, and bartered turtle shells, sea-slugs, and other products for rice and cloth (Lebar et al. 1964:263; Anderson 1890:2). They were often hired by the Chinese and the Malays to collect the edible nests of swiftlets (Nostitz 1878:233). In the light of these data it is natural to inquire whether a similar pattern of interaction prevailed in the Andamans. Man (1883:338–9) is of the opinion that it did not. Moreover, Helfer's (Nostitz 1878:228) suggestion that the occasional occurrence of curly hair among the Moken indicates an affinity with the Andaman Islanders is discounted by Sopher (1965:165) who does, however, indicate the plausibility of limited contact taking place between the Moken and the Semang of the Malay Peninsula in the past. In this regard, the adaptation of the Orang Laut (sea people) communities is not a very ancient one, and could have developed in the Strait of Malacca and the southern Philippines within the last 1500 years (Bellwood 1985:136–7).

The putative occurrence of silent trade in the Andamans is, at present, only relevant in a hypothetical framework which seeks to elucidate their origins and cultural heritage. The lack of substantive data is perhaps the major weakness in this argument.

Shipwrecks: A Possible Source of Iron and Other Resources

Iron seems to have been highly appreciated by the Andaman Islanders as a raw material for the manufacture of arrowheads and knives (see Fig. VI.7). In fact, when the British colonized these islands in the nineteenth century, iron objects were among the 'gifts' that were offered to the Islanders (Man 1883: 339, 379). As mentioned earlier, every object on Ritchie's ship was most eagerly sought after by his guests. In another instance, when some Islanders received gifts from Blair they 'were highly pleased with some knives, nails, etc., and the man appeared quite overjoyed with a small hatchet which he exercised on several trees with the appearance of great satisfaction, hallooing to us to observe his dexterity' (Temple 1900a:113).

Iron, therefore, was highly coveted, and whenever an opportunity arose every attempt seems to have been made to secure it. However, an efficient technological repertoire of artefacts of shell, stone, wood, and bone, did not render metal an indispensable resource. On the other hand, the numerous shipwrecks, which have long made the Andaman Seas notorious, were an ideal source of iron and other materials. Irregular though the supply of metal may have been, a single ship could perhaps last a group of Islanders for a very long time. In this regard, the Chauldari midden in South Andaman yielded pieces of metal in the lower as well as the upper levels (Dutta 1978:24), though in the midden at Beehive Hill in Middle Andaman, iron did not occur below a depth of 15 cm (Cipriani 1966:73). On the basis of radiocarbon determinations, the ages of the sites at Chauldari and at Beehive have been estimated at 2280 ± 90 years BP (BS-599) and 1370 ± 100 years BP (PRL-1237), respectively (Cooper 1993a).[1]

An analysis of the nature of contacts and communications with reference to the Andamans suggests that, notwithstanding the potential of silent trade or any other mode of exchange, the existence of effective subsistence strategies based entirely on locally available raw materials, and supplemented by the occasional availability of iron from ship wrecks, would have minimized the demand for raw materials from areas not within the Archipelago. Under such circumstances, the incentive to participate in a symbiotic trade relationship would not have been as strong as in a situation where there was a dearth of essential resources. That this need not always be the case is demonstrated by the long-standing trade relationship between the Batek, who are hunter–gatherers in the Malay Peninsula, and the Malays who practise agriculture (Endicott 1984:30). Although the Batek can subsist entirely on wild foods, they prefer a mixed economy involving the collection and trade of rattan (Endicott 1984). This system proves more efficient in the long run as 'they can obtain 1.56 times as many calories per hour of work by collecting rattan as by gathering tubers' (Endicott 1984:49).

The Andaman Islanders have no such tradition of exchange, though conditions for it would have been more favourable at a time when the danger of slave-raiding was minimal, as also when shipwrecks were less frequent (perhaps 1500 years ago). Under such circumstances,

[1]BS is the Birbal Sahni Institute of Palaeobotany, Lucknow; PRL is the Physical Research Laboratory, Ahmedabad.

the chances of obtaining iron and other materials through the types of opportunities mentioned above would be considerably reduced.

However, wrecks do occur in these waters, and in the past, these accidents must have provided resources that would otherwise have been almost impossible to procure. Therefore, they can be regarded as a means of culture contact, no matter how tenuous, by creating a situation wherein a group of relatively isolated people could acquaint themselves, in their own fashion, with items representing a way of life that is quite alien to them. The frequency of wrecks would provide a fairly constant supply of goods of all kinds, and would thereby create the need for certain commodities. Some of the latter may have gradually been incorporated into the economic system of the people concerned, and could also have influenced their social and religious institutions. In this regard, attention may be drawn to the well-established custom of barter between coastal (*aryoto*) and inland (*eremtaga*) groups, particularly in the larger islands of the Andaman chain (Man 1883:340). It is significant that 'all iron-pointed weapons, tools, or shell ornaments are eagerly accepted by the *eremtaga* in exchange for such things as . . . . an adze' (Man 1883).

There is some interesting evidence indicating that wrecks were stripped bare by the Islanders, who often gathered in large numbers for this purpose. Long experience in such activities had obviously emboldened them to the extent that when Blair landed on Chatham Island, off Port Cornwallis, North Andaman, in December 1789, he was attacked by 'a party of natives' who not only attempted to drive off the intruders, but take their possessions as well (Temple 1900a:128). It appears that the Islanders 'immediately began to plunder the cutter, which was then hauled ashore, and. . . . [Blair] found it necessary to make use of some force to dislodge them; in the conflict one of the Sepoys was wounded, and in their flight two of the natives were taken' (Temple 1900a).

The following are a few recorded instances of wrecks being exploited by the Andaman Islanders:

In 1825, while examining an Onge hut in Little Andaman, Alexander (1827:46) and his party found a basket containing the head of a harpoon, a Malay chopping knife, and several spike-nails and ring-bolts, all wrapped carefully in a cloth. The last three items presumably belonged to the American ship *Dover* which was wrecked there a few years earlier. [Alexander 1827]

In September 1849, strong winds drove the ship *Emily* onto the reef fringing Interview Island (Portman 1899:177). When a rescue party reached the scene seven weeks later, it found a hostile group of more than 200 natives, who were armed and some even wearing clothes, which had probably been taken from the wreck. Only gunfire succeeded in dispersing the crowd, which subsequently cooperated in the salvage operation, 'voluntarily returning articles they had plundered from the wreck, copper sheets among the rest of the loot being brought down to the beach and restored' (Portman 1899:181).

During a survey of the Middle Straits in August 1860, the crew of the *Clyde* found some iron wreckage in a hut, and some of the Islanders were seen in clothing 'though there were no other signs of shipwrecked persons' (Portman 1899:300).

When Portman visited the western coasts of the Andamans in October 1883, he saw that a number of canoes 'were going to a wreck on the west coast of the Middle Andaman and that most of the Andamanese from the North Andaman had gone there to loot' (Portman 1899:658). The ship concerned was the *Scottish Chieftain*, which had gone ashore at Bluff Point. While the crew had managed to get away in their boats to the Cocos Islands, 'everything else movable had been taken away by the Andamanese, who had cut holes in the deck to try and get at the cargo. . . .jute and seed which had swollen and rotted' (Portman 1899).

The free distribution of dogs, iron, bottles, tobacco, pipes, and matches among the coastal population of these islands was one of the early policies of the penal settlement (Man 1883:339). It was implemented with a view to gaining the trust of the different groups of Islanders, and was successful in doing so, but to their detriment. But that is another story. What is relevant to the present discussion is that after 1858, the 'raiders of the lost ark' became the involuntary but willing recipients of the very items they sought, thus changing their way of life completely.

The effects of strong easterly gales in the dry season are also felt in the Nicobars, casting ashore dug-out canoes from the opposite coasts of Burma and Malaya. Man (1886:430–1) records two instances, one in December 1884, and the other in January 1885, when

> boats of this kind brought parties of four and seven persons respectively, who, in endeavouring to proceed along the coast of their own country, had been carried out to sea by the force of the wind which had overtaken them and, in spite of all their efforts to regain their course, driven towards the

Nicobars; both parties were fortunately provided with sufficient food for the unforeseen adventure, although the same lasted no less than three weeks. The British occupation now enables such castaways to be conveyed back to their own country, whereas in former years necessity rather than choice may have led to their establishing themselves in the land whither Fate had transported them.

The implications of these events for the colonization of the Nicobars, and perhaps the Andamans, by drift-voyagers is particularly noteworthy.

Water Transport

So far the discussion has centred on some of the major external social and economic influences on the Andamans and their putative role in determining inter-island and inter-regional patterns of interaction. In keeping with this theme, it would now be apposite to consider the modes of transport which enable the Andaman Islanders to travel from one island to another, and possibly farther than their own Archipelago.

Three types of watercraft are known to have been used by the Islanders, namely the single outrigger canoe, the large canoe without an outrigger, and the raft (Man 1883:366–70; Radcliffe-Brown 1922:485–92). The outrigger appears to have been the principal means of inter-island communication for the people of Great Andaman and Little Andaman. This type of canoe is also the characteristic boat form in the Nicobar Islands, but in Hornell's (1920:183–5) opinion the Nicobar type differs markedly from the one found in the Andamans, which he compares with similar watercraft used in North Queensland, Australia. Haddon (1920:79, 97), however, points out that the stick attachment of the Nicobarese canoe is very close to that of the Andamanese outrigger, the only difference being that the latter has several booms while the former has only two.

It is interesting to note that the Andamanese legend regarding the origins of their race alludes to a time when canoes had no outriggers, 'and were made by scooping out the trunk of the *Pandanus*, which is believed to have been much larger than it is nowadays, and well adapted for the purpose' (Man 1883:165). Whether this myth connotes environmental changes cannot yet be determined, though according to popular local belief, a great flood is supposed to have occurred in the past, after which 'the *Pandanus* was found to be unsuitable for its

former uses, and canoes were thenceforth made from the *Sterculia villosa*, and other trees' (Man 1883:169).

The plain dugout is a comparatively recent innovation, and the ability to make it has been attributed to the plentiful supply of iron tools from the settlement at Port Blair (Man 1883:367). The Middle and North Andaman groups seem to have derived this invention from their counterparts in South Andaman (Man 1883:367).

The principle of the oar was also learned through contact with the penal settlement and was applied to the largest canoes, whereas the smaller canoes continued to be propelled by paddles (Radcliffe-Brown 1922:490).

The large plain canoe has the distinct advantage of being able to withstand rough seas (Man 1883:368), and this type of craft as well as the single outrigger are unsinkable on account of the light wood used for their manufacture (Man 1883:369).

The above data clearly illustrate the ability of the Andaman Islanders to adopt new technological concepts when these suited their needs. However, the Jarawa do not seem to have absorbed these ideas, for they use rafts of bamboos lashed together for crossing creeks and inlets. This mode of transport was apparently available to the Jarawa long before they were first seen using it by Colebrooke (1795:391). The fact that this particular group of Islanders was formerly confined to inland areas, and was not on friendly terms with neighbouring groups, probably explains why they did not adopt more efficient modes of travel. Moreover, even today, when the Jarawa occupy the western coasts of Middle and South Andaman, they continue to use rafts, while the North Sentinalese, the few surviving Great Andamanese, and the Onge cross over from island to island in their outrigger canoes (Fig. II.1).

It is tempting to believe that rafts predate canoes in the Andamans. It must be admitted though that the colonization of this Archipelago in such light watercraft is difficult to imagine unless, of course, a series of drift voyages, as witnessed in the Polynesian region, is considered a possibility. Of what significance then is the legend suggesting that in age the plain canoe precedes the one with the single outrigger? Moreover, does the combination of myth and fact indicate that the raft and/or the ordinary dugout were the earliest means of transport known in the Andamans? The paucity of evidence in this connection does not enable these questions to be satisfactorily answered. What is relevant in the present context, however, is that the single outrigger is regarded

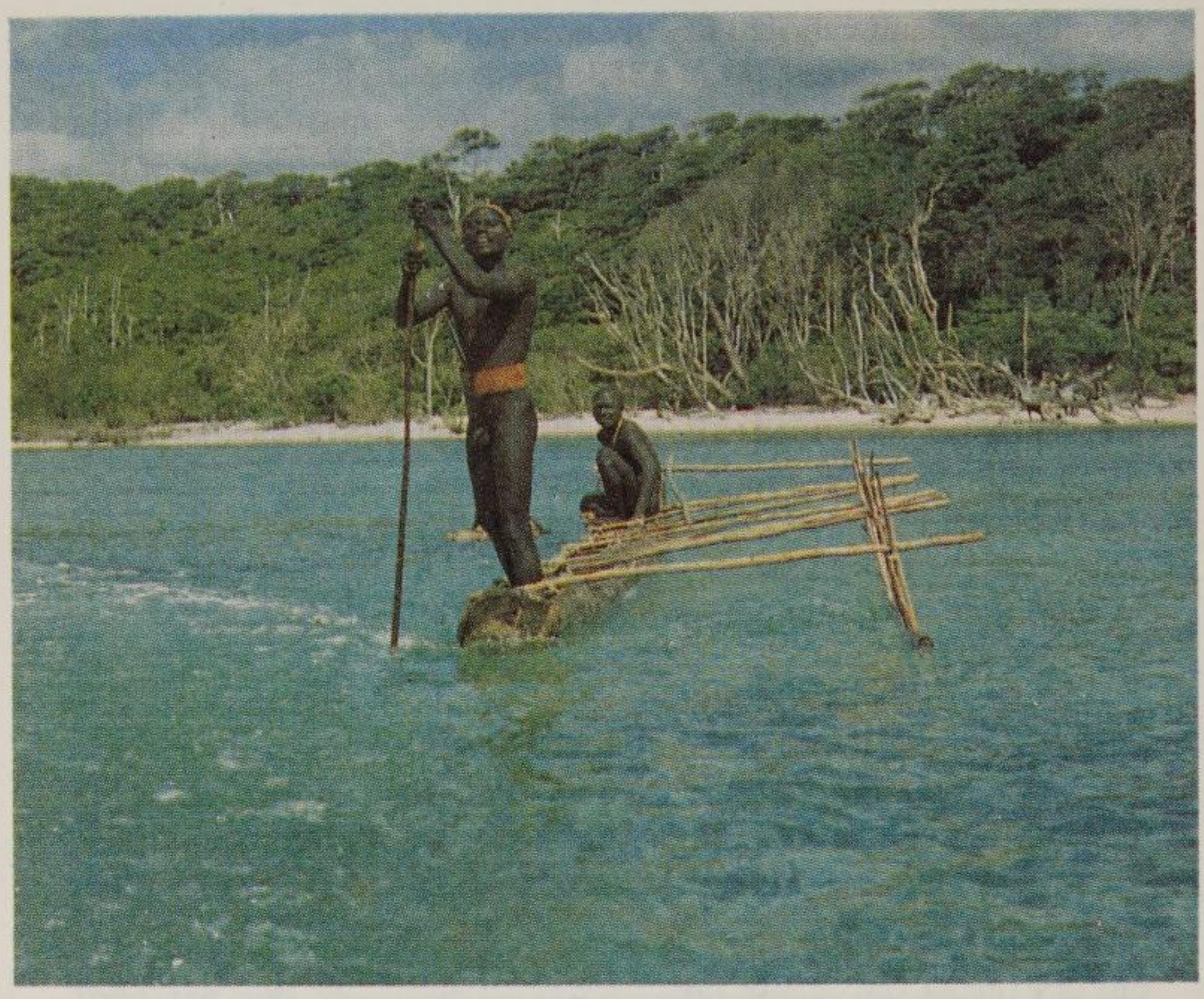

Fig. II.1. A Sentinalese in his canoe

as a relatively recent expansion in the southern and south-western coasts of India (Doran 1981:78). It can be postulated, therefore, that such watercraft may not be of very great antiquity in the Andamans and the Nicobars.

Regardless of when the outrigger first made its appearance in the Bay of Bengal, its widespread use can be attributed to its stability even in poor weather conditions. A good example in this regard is provided by Dampier's account of 1688, concerning his unsuccessful attempt to leave the Nicobars in a plain dugout canoe, which capsized as soon as it left the shore (Temple 1903:224). Dampier was fortunately accompanied by some resourceful Achinese who 'fixt our canoe with outlagers (outriggers) on each side; and they also cut a good mast for her, and made a substantial sail with mats' (Temple 1903). Thereafter, their voyage was understandably smoother.

Thus, despite their flimsy construction, the outriggers of the Andaman Islands, which, incidentally, are without sails, are quite efficient for inter-island voyages. This is supported by Cipriani's (1966:90) remark that 'with the help of their fragile but very fast canoes, and without carrying food or water (which they know will be available at the next transit camp), they [the Onge and the other groups of Great Andaman] can travel very quickly'.

However, journeys over long distances would be quite hazardous in single outriggers, though large plain dugouts would provide a greater measure of safety when venturing far out to sea. Notwithstanding the enigmatic origins of the different watercraft characteristic of this area, they greatly facilitate communication within the Archipelago.

Another noteworthy feature is the readiness with which certain ideas and innovations can be adopted, while others are eschewed or ignored. The latter category would include inventions that were of no significance in the socio-economic context. The utilitarian value of any object would probably be measured in terms of the prevalent social, religious, and economic concepts of a society. In this regard, can the Andaman Islanders be regarded as conservative?

On the one hand, Andamanese society was composed of a number of groups, each consisting of several sub-groups. The social organization did not require relationships to be maintained between groups that lived more than 100 km apart (Radcliffe-Brown 1922:23). Thus society as a whole was characterized by an insular structure which was, however, versatile enough to permit the introduction of certain objects such as canoes and pottery, though probably through widely different channels of communication and at different periods in the course of history.

Overview of the Nature of Contacts

From the early written accounts it is evident that the Andamans were practically unknown from the historical, geographical, and anthropological points of view. The imagination of early travellers was stimulated by rumours of cannibals and monstrous creatures. These fantastic tales were no doubt cherished and encouraged by various coastal communities in Malaysia, Burma, and in the adjacent areas with the intention of maintaining their monopoly over certain natural resources available in the Andaman Archipelago, including the Islanders

themselves. The geographical knowledge of the Andamans and, to a limited extent, of their human population possessed by the seafaring folk, such as the Orang Laut, must have been considerable, but it has never been recorded, for there was no apparent reason to do so. Under these circumstances, inter-regional communications involving these islands went largely unnoticed. The travellers on whose documents one has to rely generally hailed from distant lands, and they made it a point to stay clear of the Andamans as far as possible. They only touched the Nicobars en route to and from the Malaysian Peninsula and Sumatra, and regions farther east. The Andaman Archipelago, therefore, did not feature on the map of international trade routes, except as a brief reference in navigational charts. However, the islands were probably quite prominent within the local economic network of the southern part of the Bay of Bengal, a network about which a dearth of relevant records allows only inferential statements to be made at present.

In endeavouring to determine the channels through which the Andaman Islanders may have interacted with their neighbours the investigation enters the sphere of conjecture. This framework of inquiry considers the possibility of silent trade as a means of exchange through which certain economic influences may have been feasible. Underlying this line of thought is the constant reminder of the deep-rooted mistrust of strangers on the part of the Islanders, arising no doubt from the bitter experience of slave raids. Whether there was less reason for caution in the past will remain an unresolved problem till further research provides the required evidence.

Over the centuries shipwrecks have provided a particularly abundant, though erratic supply of resources, including iron and glass. These, in turn, have constituted important components in the local barter system. On the one hand, a gradual need for metal and other items may have arisen, while on the other, the occurrence of wrecks might have either reduced the incentives for expanding the prevalent system of exchange to areas beyond their territorial boundaries or the multiplicity of wants might have impelled some Islanders to risk contacts with relative strangers. When viewed in this light, isolation with regard to the Andamans is only a minor criterion for 'successful cultural resistance' (Sopher 1965:360).

Moreover, one is left with the general impression that the Islanders were, more often than not, at the receiving end of any relationship which involved the introduction of concepts or materials representative

of other cultures. This process took place either through chance encounters with people of other societies, or through deliberate attempts by the latter to contact the Islanders for purposes of barter or for exploiting them as slaves. Reciprocal involvement is likely to have been limited, considering the overall self-sufficiency of the people concerned and the fact that circumstances compelling them to seek contacts with other races appear to have been minimal. In other words, a situation wherein the cultural traditions foreign to this area were actually thrust upon the local people, enforcing drastic social and economic changes does not seem to have taken place until the nineteenth century. Thus the freedom of choice to adopt or reject an idea or innovation was greater in the past, and formed a fundamental criterion of the process of adaptation. The latter would have operated in conjunction with changing social, economic, and environmental conditions over the millennia, both within and outside the Archipelago, to create a unique interplay of factors that eventually determined the history of the society in the Andaman Islands.

III

Archaeological Surveys

The location of archaeological sites provides information on how people organized themselves in a particular environment in relation to resources that were considered vital throughout a seasonal cycle and in relation to group structure and territorial boundaries. The fact that shell middens are ubiquitous in the Andamans renders it necessary to view their occurrence from the perspective of the geomorphic processes that have shaped these islands.

Geomorphic Processes

The Andaman and Nicobar Islands constitute the outer sedimentary arc of the Sunda-Burmese chain that links the Indo-Burma ranges in the north with the islands of Indonesia to the south (Jafri and Charan 1992). The bulk of the Andaman–Nicobar ridge comprises a Cretaceous serpentine basement, which is overlain by contorted Paleocene to Miocene deposits, including Upper Eocene and Oligocene graywackes. These rocks are strongly folded and reverse-faulted westward and are overlain by flat-lying Miocene to recent reef-derived clastics (Rodolfo 1969:1207). This process of folding and the uplift of the Andaman and Nicobar Islands took place during the Oligocene and Late Miocene periods (Rodolfo 1969:1228).

Major channels transect the Andaman–Nicobar ridge, dividing the islands into four groups which are fringed by coral shelves 10 to 50 km wide west of the islands, and less than 10 km wide east

of the insular coasts (Rodolfo 1969:1213). The Andaman Group is paralleled 22 km off the western coasts by a discontinuous barrier reef that, Sewell (1925:18) concludes, was formed due to the gradual submergence of the western coast when recent tectonism tilted the island group westward.

The western coastlines of the Andaman Islands are fairly straight and gentle, and coastal plains occur only along the western shores. The eastern shores are strongly indented and steep, and in many places coral reefs and beaches are raised as high as 20 m above sea level (Sewell 1925:15, 17). Raised beaches and recent to sub-recent coral beds above the present sea level also occur in the islands of the Ritchie's Archipelago. These bear evidence of recent sea level fluctuations (Srinivasan 1978–9:50).

Local tectonism may partially be explained by the thrusting of the Indo-Australian Plate against the Eurasian Plate in a north–south axis, a little over a 100 km east of the Andamans. This has resulted in the formation of two volcanic islands, namely Narkondam and Barren. While the former is extinct, the latter erupted in 1789 (Pascoe 1964:1871) and quite recently on 16 May 1991.

On South Andaman Island, alternating anticlinal ridges and narrow valleys are quite apparent, and fracture lines generally follow a nort-east–south-west trend. Preliminary investigations of these features, undertaken in collaboration with Dr Hema Achyuthan, reveal that the shoreface surfaces of South Andaman Island and Jolly Boys Island (Macpherson Strait) exhibit different tectonic histories spanning the period from 3800 years BP to 775 years BP (Fig. III.1). From 4000 years BP to the present, the net tectonic displacement and uplift of Jolly Boys Island is nearly 2 m, at the rate of 0.2 mm per year. On the other hand, the shoreface at South Point, Port Blair, has been uplifted since 810 years BP at the rate of 1.2 mm per year, while during the same period the Wandoor coast, on the southern tip of South Andaman, rose at the rate of 0.5 mm per year (see Tables III.1 and III.2, and Fig. III.2). These dates have been calibrated following Stuiver and Braziunas (1993).

The rates of subsidence and uplift recorded at various locales in South Andaman Island reveal that the area between Jolly Boys Island, Wandoor, and Chidia Tapu, in the southern part of South Andaman, is an emerging landscape characterized by land-bridging activity resulting from the formation of coral. The low emerging coral platforms along the present-day shoreline are a result of

differential erosion caused by wave action (Cooper and Achyuthan 1991).

Table III.1. Mineralogical composition of rock and sediment samples

Site and sample	Mineralogical composition
1. *Wandoor*	
(a) Tidal clay	Quartz, muscovite, olivine, altered olivine, few grains of hornblende (3–4%), well-rounded quartzitic grains (5%), and a few glass grains (2–3%). Clay minerals are kaolinite and montmorillonite.
(b) Beach rock	Micritic and microsparitic calcite, aragonite with broken coral and mollusc and shell fragments.
2. *Chidia Tapu*	
(a) Beach rock	Similar to Wandoor, but contains tiny blue glass minerals and detrital sandstone grains (less than 5%), with well-rounded clay pellets.
(b) Sandstone	Very fine-grained, predominantly composed of quartz, feldspars and very few grains of mica; less than 3–4% of heavy minerals (rutile, tourmaline, ilmenite, and magnetite).
3. *Jolly Boys Island*	
Beach rock	Similar to Wandoor, but with a higher percentage of heavy minerals (5–8%).

Table III.2. Radiocarbon determinations

Site	Present elevation and location	Radiocarbon age	Calibrated age	Remarks
Wandoor (carbonised drift wood)	On the beach—10 cm below the surface (BS-1041)	80±90 yrs BP	—	modern
Wandoor (tidal clay)	20 cm below the surface	810±100 yrs BP (BS-1040)	AD 1370–1390	uplift 0.5 mm/yr

(Contd.)

Table III.2 (Contd.)

Site	Present elevation and location	Radiocarbon age	Calibrated age	Remarks
Chidia Tapu (tidal clay)	30–35 cm below the surface	1070±100 yrs BP (BS-1048)	AD 770–1200	uplift 0.2 mm/yr
South Point	90 cm above the present-day low tide sea-level mark	775±45 yrs BP (A – 8377)	AD 1188–1299	uplift 1.2 mm/yr
Jolly Boys Island (coralline beach rock)	60 cm from the surface	3800±90 yrs BP (BS-1043)	1990–1950 BC	uplift 0.2 mm/yr

Shell Middens

Although a midden has been defined as 'a cultural deposit of which the principal visible constituent is shell' (Waselkov 1987:95), such sites in the Andaman Archipelago are rich not only in faunal remains but also in pottery and artefacts of bone, stone, and shell. These mounds are generally associated with camping grounds that were more or less permanently occupied (Man 1883:105; Cipriani 1954:69). Transient or impermanent camps do not survive in the tropical climate of the Bay of Bengal, as indicated by a study of abandoned Onge encampments on Little Andaman Island, which is discussed in Chapter VI.

Systematic surveys on land are fraught with difficulties, what with there being relatively few roads, slow ferry services (it is not unusual to spend an entire day covering less than 100 km), and the prospect of being stranded without any transport during stormy weather. Under the circumstances, explorations can only be undertaken within a limited radius around a village or town, and much depends on the availability of boats/canoes to negotiate the innumerable streams and creeks. Most of the archaeological sites described herein are therefore concentrated around modern human settlements.

Comprehensive records, based on my surveys, are available for 43 shell middens out of a total of 62 that have been located

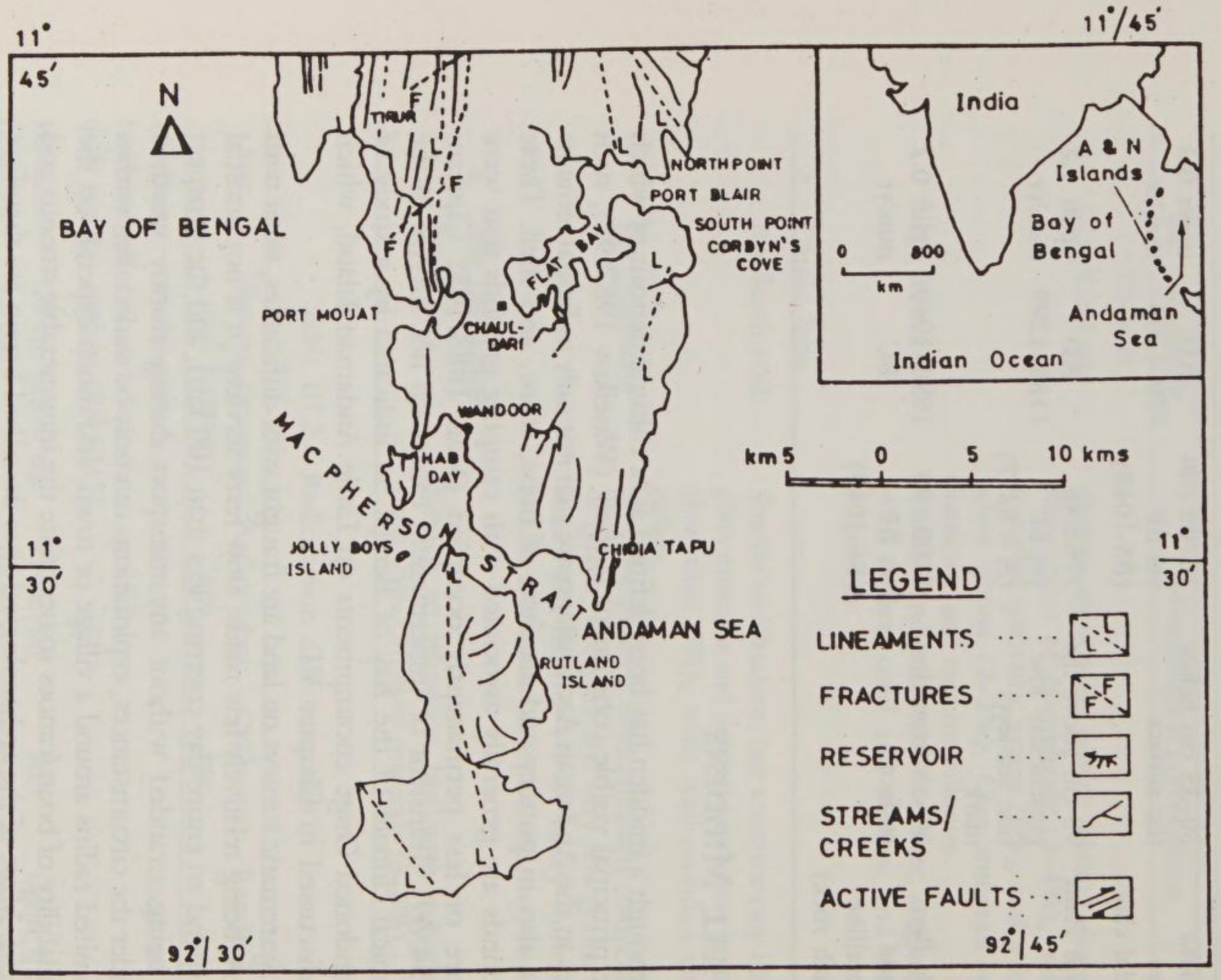

Fig. III.1. The geological structure of the southern part of South Andaman Island

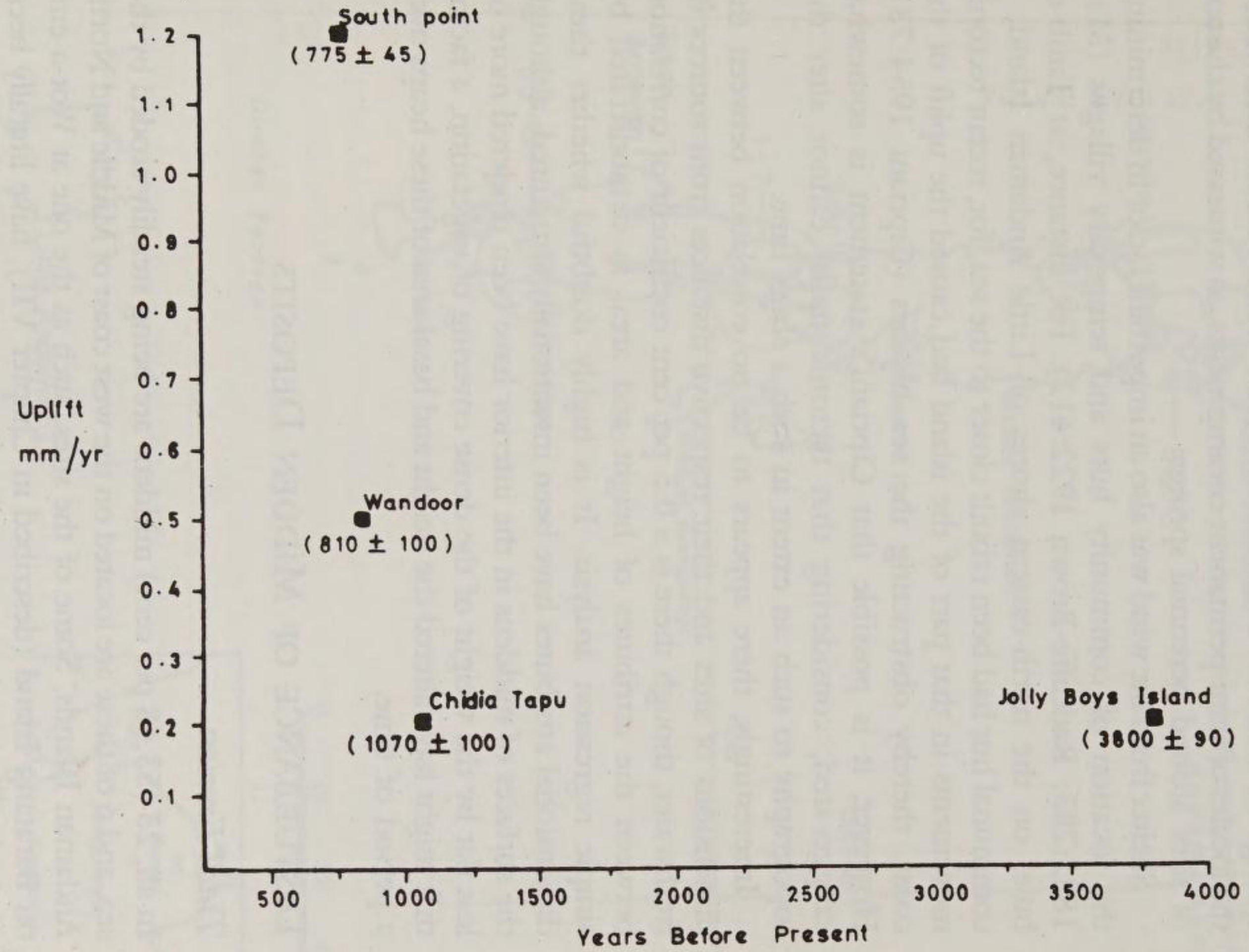

Fig. III.2. Tectonic uplift of different areas in South Andaman Island between 4000 14Cyr BP and 500 14Cyr BP

(Fig. III.3). There is an average density of two to five middens per sq. km. Among the 43 surveyed sites, 27 (62.79 per cent) lie within or just behind the mangrove swamps, and are generally situated on rocky platforms. Middens cover an average area of 240 sq m, while the mean height is 1.5 m.

The majority of the deposits, regardless of whether they are situated inland or along the coast, occur within 1 km of freshwater springs or streams. Undoubtedly, these water sources determined the locales of semi-permanent encampments, as witnessed by clusters of sites around perennial springs.

Shelter from the wind was also an important factor in determining the location of community huts and temporary villages (Man 1882:283; Radcliffe-Brown 1922:412). For instance, at Tamb-e-buie, on the north-eastern shores of Little Andaman Island, a communal hut had been rebuilt closer to the sea, for, recent tectonic movements in that part of the island had caused the uplift of the coast, thereby obstructing the sea breezes (Cipriani 1954:73). However, it is possible that Cipriani's statement is somewhat exaggerated, considering that tectonic uplift cannot alter the topography to such an extent in such a short time.

Interestingly, there appears to be no correlation between the dimensions of sites and their respective distances from sources of freshwater, though there is a 0.5 per cent coefficient of correlation between the attributes of height and area, as demonstrated by simple regression analysis. It is highly doubtful whether these dimensional attributes have been intentionally structured, although the surfaces of middens in the interior have been rendered more or less flat by the weight of the dense covering of vegetation, a factor that might have altered the height and basal area of these heaps over a period of time.

Disturbance of Midden Deposits

Tidal Erosion

In all, 23 (53.48 per cent) middens are being steadily eroded by the sea, and 6 of these are located on the west coast of Middle and North Andaman Islands. Some of the sites, such as the one at Wot-a-emi on Baratang Island (described in Chapter VII), have literally been cut in half by tidal waters, although the Andamanese used to camp

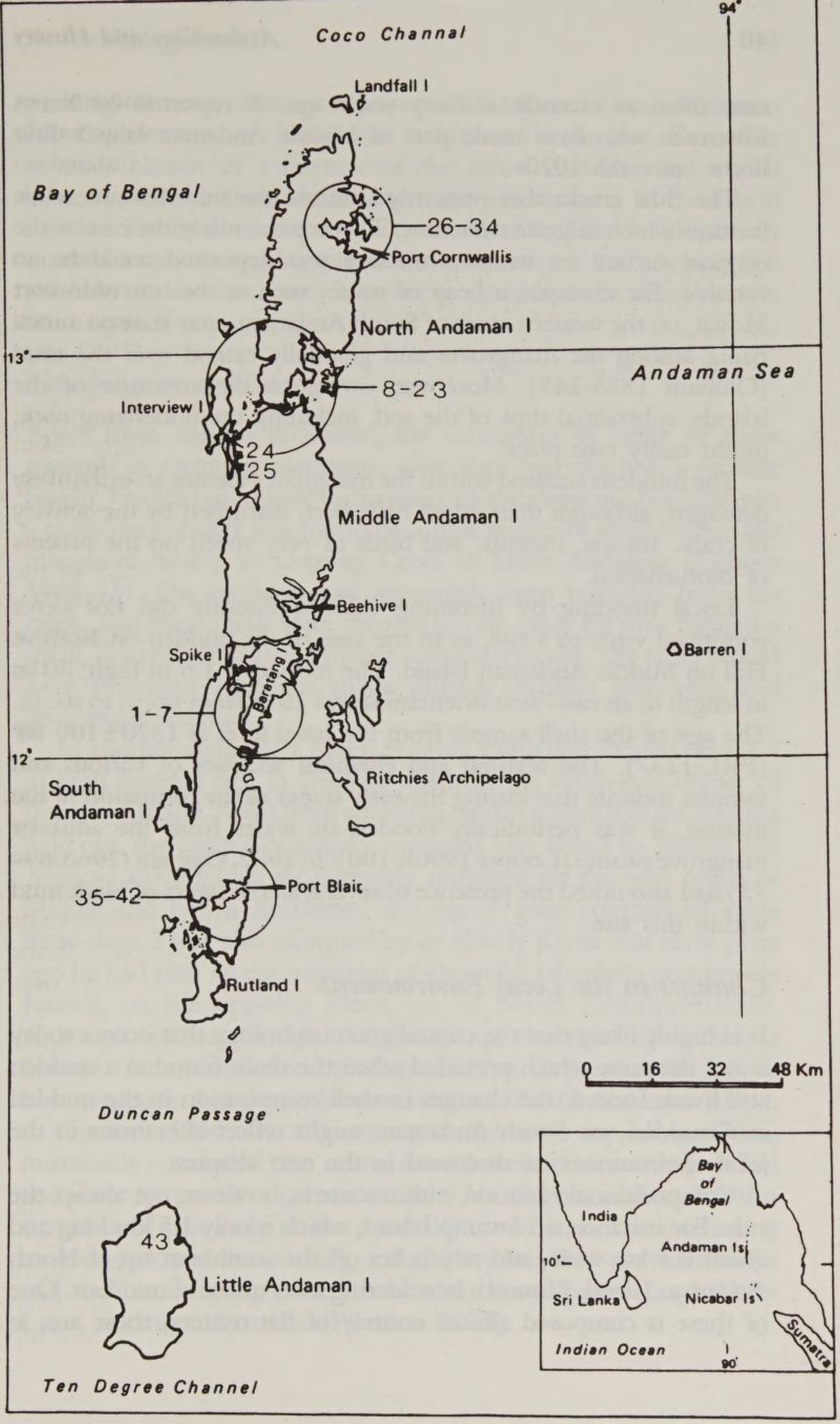

Fig. III.3. The Andaman Islands showing locations of site surveys

near them as recently as forty years ago, as reported by Karen fishermen who have made part of Middle Andaman Island their home since the 1920s.

The tidal creeks that presently truncate the middens are active features which migrate over time. This is particularly the case as the original surface on which a midden was deposited could be so variable. For example, a heap of waste, such as the one near Port Mouat, on the western coast of South Andaman, may start on a rock rising among the mangroves and gradually extend over the mud (Oldham 1885:145). Moreover, owing to the structure of the islands, substantial slips of the soil, including the underlying rock, might easily take place.

The middens situated within the mangroves are not so extensively damaged, although their edges have been disturbed by the activity of crabs. Insects, rodents, and birds of prey speed up the process of bioturbation.

Local flooding by incoming tides apparently did not deter continued visits to a site, as in the case of the midden on Beehive Hill on Middle Andaman Island. The mound is 1.5 m high, 30 m in length in an east–west orientation and 25 m from north to south. The age of the shell sample from the basal level is 1370±100 BP (PRL-1237). The textural and chemical analyses of various soil samples indicate that during the early stages of the formation of the mound, it was periodically flooded by water from the adjacent mangrove swamp (Cooper 1990b:100). In 1952, Cipriani (1966:69–73) had also noted the presence of several sterile layers of black mud within this site.

Changes in the Local Environment

It is highly likely that the coastal geomorphology that occurs today is not the same which prevailed when the shells found in a midden still lived. Indeed, the changes in shell composition in the midden at Chauldari, on South Andaman, might reflect alterations in the local environment, as discussed in the next chapter.

Compositional variation within a site is, however, not always the rule. For instance, on Swamp Island, which is only 1.5 km long and about 0.5 km wide, and which lies off the south-east tip of North Andaman Island, I found a bewildering assortment of middens. One of these is composed almost entirely of flat oysters; these are, at

present, common off the west coast of Middle and North Andaman Islands, but may have been more widespread in the past. Two other mounds consist of a mixture of the genus *Anadara* and of flat oysters, while shells of the *Anadara* are predominant in the fourth midden. The freshwater spring in the north of the Island undoubtedly marked a major camping place. Unfortunately, it has not yet been possible to date these sites in order to determine the differences in their ages, if any.

Camping on a Midden

Apart from natural processes, the utilization of some of these mounds as camping platforms, after they had reached a suitable height, resulted in further disturbance of the deposits. For example, a temporary shelter was found on a thin scatter of shells within the mangrove swamp at Dugong Creek in Little Andaman (Cooper 1985:32). The molluscs had apparently been collected from the creek, and their shells were thrown in one place till they formed a small, dry spot on which a shelter could be erected. The latter would have provided adequate shade during shellfish gathering and processing activities.

In another instance, a Karen hunting camp was located on a 2.3 m high midden rich in *Tridacna* shells in the south-east corner of Interview Island. Apart from affording certain advantages for hunting wild pig, the camp would have provided easy access to *Trochus* and *Tridacna* shells which are currently abundant off the west coasts of Middle and North Andaman, and are of great commercial value these days. I was also informed by an elderly Karen that forty years ago he had seen an encampment of about 50 Islanders, presumably Jarawa, on the opposite shore, i.e. of North Andaman Island. Although nothing remains of the camp, the fact that it was a favoured haunt is marked by a large midden. At present, the Jarawa have settled farther down the west coast of Middle Andaman Island.

Cipriani (1966:80), after seeing a shelter on top of a midden, mistakenly concluded that refuse was allowed to accumulate within and directly outside a communal hut. He did not realize that this would hold true only in the event of a brief stay. It is interesting to note that middens serving a dual purpose, first as refuse heaps and then as camping places, have also been observed in Arnhem Land, northern Australia (Peterson 1973).

Limekilns

It is indeed ironical that while bona fide researchers have to put up with endless bureaucratic hassles in order to obtain permits for undertaking excavations in the Andamans, the administration and the Archaeological Survey of India appear to be oblivious to the large-scale destruction of middens, in and around Port Blair, for the purpose of extracting lime. It is still a puzzle as to whether such criminal negligence is due to apathy or the fact that the authorities are unaware of the potential of middens as valuable repositories of an ancient culture.

Be that as it may, limekilns (*chuna bhatta*) are a thriving business, the largest one being situated directly opposite the Phoenix Bay Power House. The required shells are transported from Lamba Line, on the road to Sippighat, as well as from middens on private property. Once, when some poachers were stopped, they promptly turned their attention to another midden, and very soon there were no traces of it.

Much of the lime thus obtained constitutes an indispensable ingredient in the making of *paan* which is eaten with betel nuts. In other words, if one is looking for a midden, one does not have to search too far; people are eating them all the time! And if one wishes to know the source, simply ask the local *paanwalla* or the *chuna bhattawalla*. Not only will he provide a long list of sites, but he will also add some useful information about the good old days when Burmese convicts ate molluscs and dumped the shells at various places. The economic benefits of these ancient heaps are also enjoyed by farmers who testify that middens are the best places on which to grow radish, gourd, and pumpkin!

In order to obtain lime (*chunam*) for *paan*, pieces of wood and coconut husk are mixed with the shells and then burned. Thereafter, the shells are separated from what remains of the wood and are then sold by the sackful. The charred shells are packed in 1/2 kg plastic bags and each of these is sold for Rs 4. The contents of a packet are allowed to soak in warm water for about five minutes, after which they disintegrate into powdery paste. In this regard, the shells of the *Anadara* species seem to be preferred as they are heavier than those of other bivalves. According to one informant, however, the shells of the *Polymesoda* species provide better quality lime for *paan*.

Lime for building purposes is obtained after burning the shells, soaking them in water for five minutes, and then drying them for four to five hours. The ash produced as a result is sprinkled with water and used as a heating agent in poultry cages.

For the moment, it seems that the economic value of the Andaman middens has far outweighed their archaeological potential. The latter has not only been overlooked, but it is also doubtful whether any conservation measures can be initiated unless the implications of the current situation are thoroughly assessed. This subject, in fact, could be the focus of an illuminating study.

Hava Beel Cave

This large limestone cave (42 m long, 9.3 m wide) is located in a limestone ridge to the north-west of Wrafter's Creek jetty on Baratang Island (Fig. III.4). The cave is named after the *hava beel* (white-nest swiftlet [*Collocalia fuciphaga inexpectata* Hume]), and was reported to be a Jarawa encampment till as recently as the 1950s. As the swiftlets' nests constitute a highly valued delicacy in South-East Asia, the Andamans have always attracted Malays, Burmese, and Chinese visitors who are known to have been well acquainted with Hava Beel. It was originally referred to as the 'Middle Strait cave' (Portman 1899:346). The strait separates the islands of Baratang and Middle Andaman.

A 1.5 m-wide and 4.4 m-deep trench exposed, to a depth of 3.5 m, lenses of dark organic matter deposited on a clay pellet matrix. A piece of bamboo was recovered from a layer 58 cm below the surface of the cave floor, and uncharred wood fragments from 78 cm. In addition, sieved soil samples yielded microscopic plant remains which have yet to be identified (Cooper and Raghavan 1988).

Lumps of resin from the first metre of deposit below the surface were tentatively identified by Fourier-transform infrared spectroscopy as from a tree of the genus *Dipterocarp* (Cooper 1993a). However, it is possible that the sample is of the tree *Canarium euphyllum*, the resin of which is used by the Andaman Islanders to make torches.

The basal date of 1540±110 BP for Hava Beel cave compares well with the ages of the neighbouring middens (see Chapter VII).

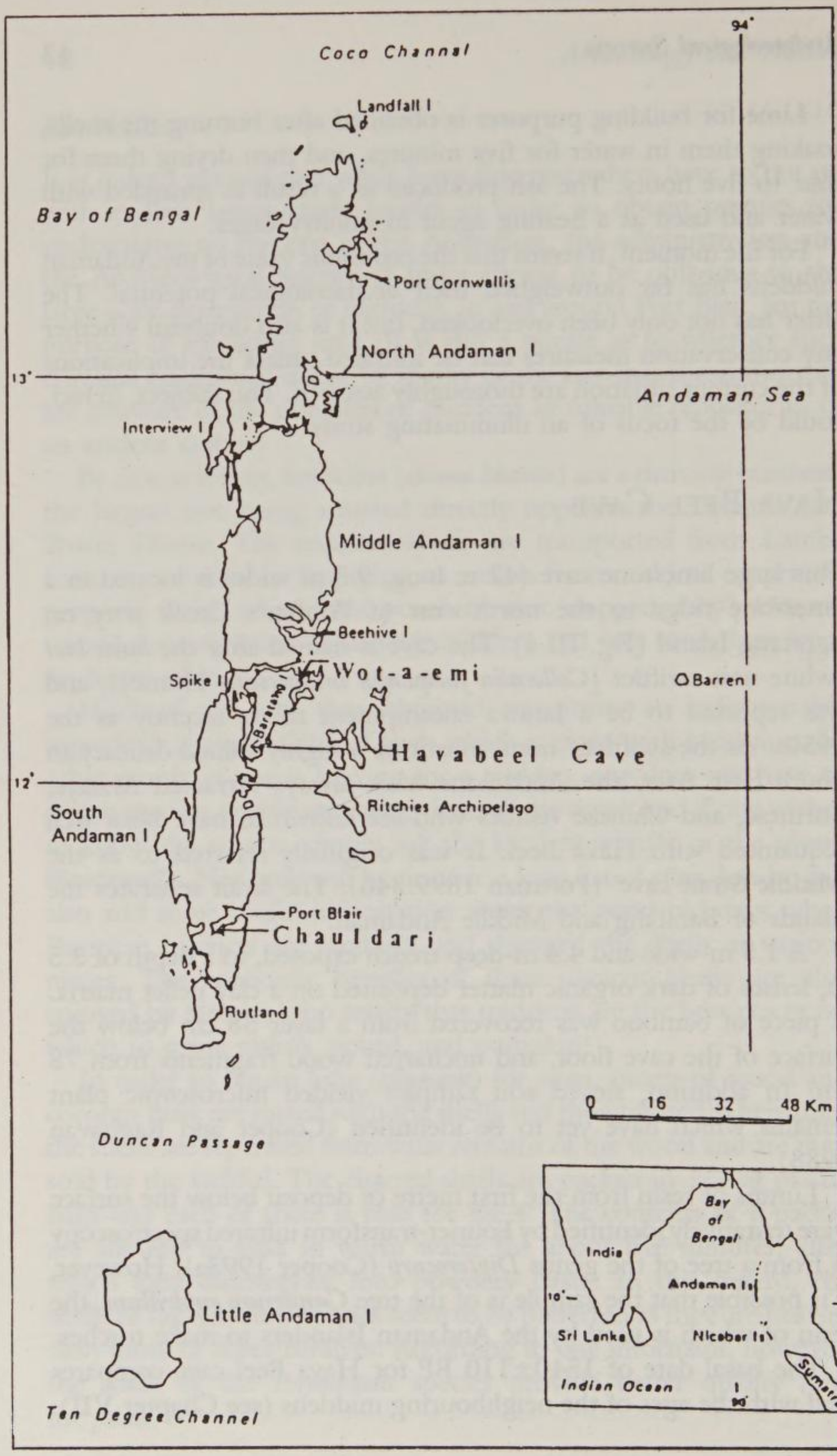

Fig. III.4. The locations of the important archaeological sites in the Andaman Islands

SEDIMENTS

Fig. III.5 shows the stratigraphy of the western section of the trench. Moderately sorted to poorly sorted sediments as well as the mixture of grain sizes indicate a source near the site. The matrix is composed of limonite, goethite, hematite, and weathered feldspar grains.

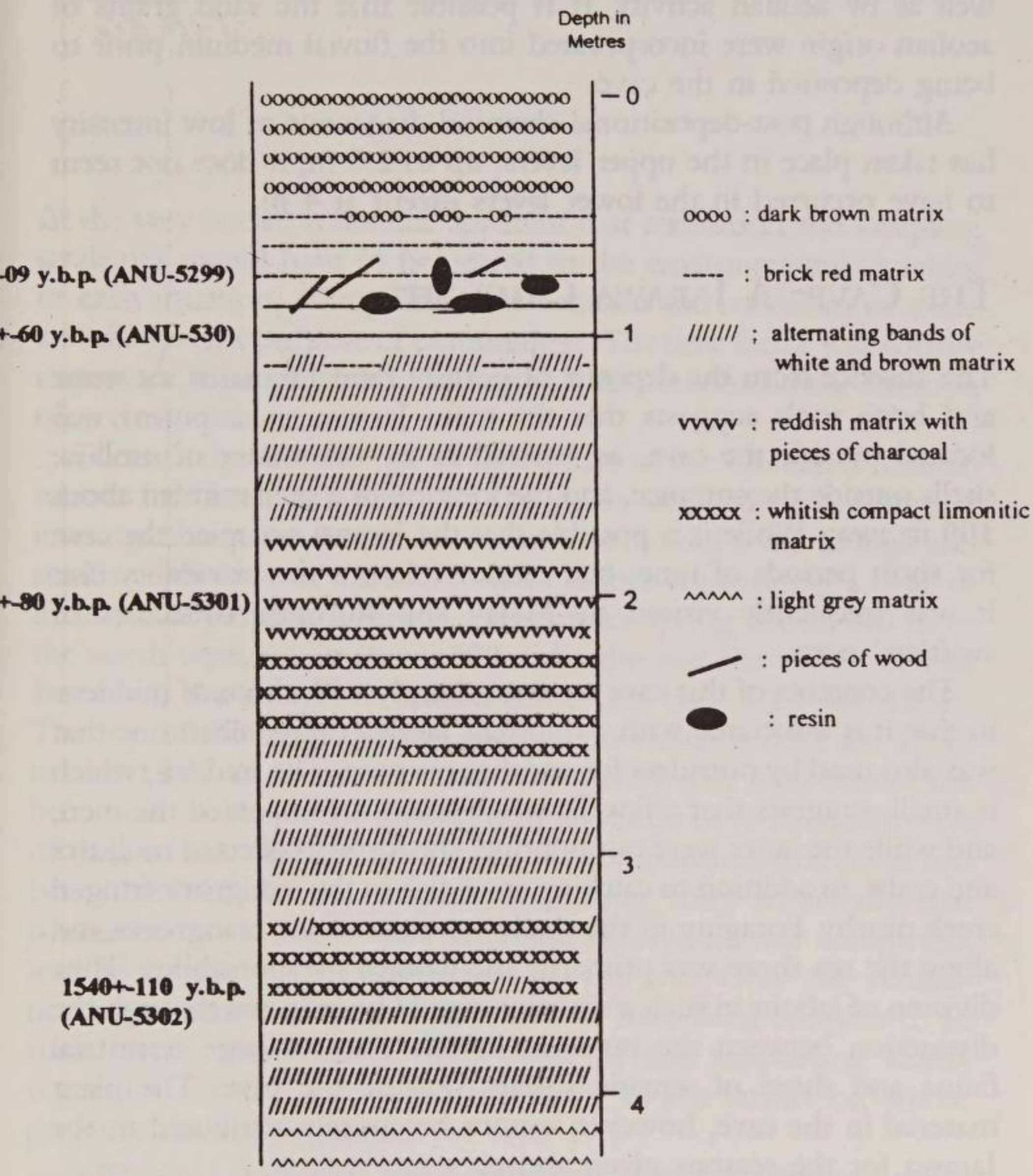

Fig. III.5. Stratigraphy of the western section in Hava Beel cave

In order to obtain a clearer idea of the mineralogical composition of the sediments, samples from depths of 1.6 m, 2 m, 2.5 m, and 4 m were subjected to X-ray diffraction analysis. In addition, scanning electron microscopy was carried out to determine the post-depositional diagenetic changes on quartz grains and clay separates from the cave sediments. The results suggest that the sand grains in the top 3 m of soil were transported mostly by fluvial activity, whereas the sand from the lower layers was deposited by fluvial as well as by aeolian activity. It is possible that the sand grains of aeolian origin were incorporated into the fluvial medium prior to being deposited in the cave.

Although post-depositional chemical diagenesis of low intensity has taken place in the upper layers, up to 2.5 m, it does not seem to have occurred in the lower layers except at 4 m.

The Cave: A Jarawa Camp Site

The absence from the deposits of pottery, faunal remains, or stone and bone tools suggests that the main Jarawa encampment was located outside the cave, as attested to by the scatter of mollusc shells outside the entrance, and the location of a shell midden about 100 m away. While it is possible that the Jarawa occupied the cave for short periods of time, one cannot rule out the possibility that it was frequently visited by Malay and Burmese collectors of swiftlets' nests.

The contents of this cave contrast sharply with those of middens in that it is associated with a transient Jarawa camp, albeit one that was also used by outsiders for another purpose. The midden, which is small, suggests that a few Jarawa women accompanied the men, and while the latter were out hunting, the former collected molluscs and crabs, in addition to catching small fish in the mangrove-fringed creek nearby. Foraging in the shallow waters of the mangroves and along the sea shore was primarily the women's responsibility. Thus division of labour in such a situation would be reflected through the distinction between the remains, in this case, of large terrestrial fauna and those of aquatic species outside the cave. The plant material in the cave, however, cannot be entirely attributed to the Jarawa for the reasons given above.

IV

The Chauldari Midden

At the very outset, it became apparent that excavation and sampling strategies would have to be geared to the environmental variables of each situation, taking into consideration the condition of a site and the specific purpose of examining it. The time factor was equally important, especially where incoming tides determined the duration of a visit.

Fortunately, this was not so in the case of the Chauldari midden which has been subjected to the most detailed archaeological investigation in the Andamans so far. The mound is 4.5 m high and stands at the base of a 24.35 m-high hillock constituting a dyke of intrusive serpentine. There is a freshwater spring about 400 m to the north-west, while about 300 m to the east the waters of Flat Bay wash the mangrove-fringed shore (see Figs. III.1 and III.4). The top of the heap and the bedrock on which it rests are 17.12 m and 12.67 m above sea level, respectively. The local school has been built on top of the hillock, only about 30 m to the north-west of the midden. Shallow pits on the surface indicated that shells had been removed for the purpose of making lime, an activity that proceeded on a larger scale after the excavation was completed, leading to the virtual destruction of the site. Only the central-northern portion of the site appeared to have been untouched. In such places, there was a thick cover of soil supporting scanty vegetation, as also a cowshed belonging to the farmer on whose property the site is located.

A trench, 1.5 m wide and 4.5 m deep, was dug into the eastern edge of the mound (Fig. IV.1). The excavated material was sorted

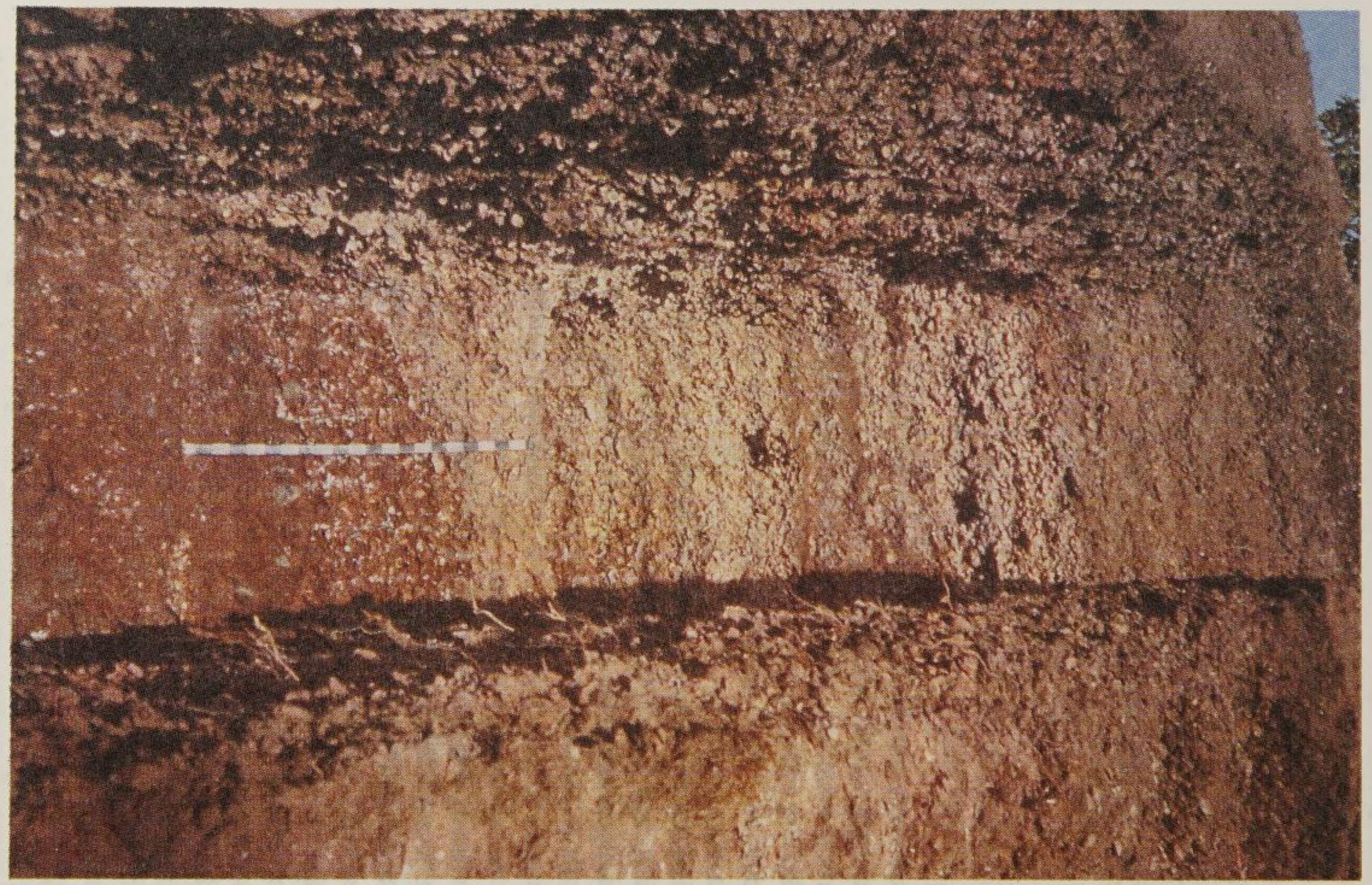

Fig. IV.1. A 4.5 m deep trench excavated in the shell midden at Chauldari in South Andaman

according to the stratigraphical layers distinguished by the sediments described below. Calcified layers, particularly those at 3.1 m, 3.5 m, and 3.9 m, were regarded as individual stratigraphical units.

Sediments

These are basically colluvio-alluvial loams composed of moderately sorted silica sand which is rich in quartz, feldspar, mica, and opaques, including fragments of charcoal and burnt clay. The soil in the lower layers is similar to fluvial sand, as indicated by poor sorting and by the sub-angular to sub-rounded nature of most of the sand grains.

Pieces of yellow glass occur in abundance at depths of 1.1 m, 2.2 m, 3.1 m, and in the potsherds that were recovered during the excavation. The glass sherds are probably of volcanic origin, which is not surprising as the volcanoes of Narkondam and Barren Islands lie to the east of the Andamans.

The principal chemical and textural attributes of the soil from Chauldari are presented in Table IV.1. The soil is highly alkaline, the pH being about 8 in all the samples. Electrical conductivity tests indicate low salinity, the salts probably having been leached away.

The better sorting of sediments in the upper deposits of the midden, despite the anthropogenic factor, indicates that aeolian activity operated to some degree during the formation of these layers. During the initial stages of site formation, it is possible that the poorly sorted sand originated from a stream flowing nearby. However, as the mound grew higher, much of the sand within it seems to have been transported by the wind.

Possible Changes in the Local Environment

During the earlier phase of occupation (2.2 m to 4.5 m), species belonging to rocky shores and estuaries, such as *Saccostrea cucullata*, *Nerita lineata*, and *Thais luteostoma*, are predominant, while during the later phase of occupation, the mud flats seem to have increasingly been exploited for bivalves such as *Marcia recens, Anadara granosa, Anadara antiquata*, and *Scapharca (Cunearca) congrua*. The fact that different habitats were exploited is in itself rather intriguing, for the degree of accessibility of shellfish beds is brought into question.

Table IV.1. Chauldari midden—soil analysis

Depth (m)	Colour	Texture	pH	Organic carbon %	$CaCO_3$ %	Electrical conductivity milimose per cm	Phosphate %
0.35	Dark brown 7.5 YR 3/2	Coarse clayey silt	8.02	2.1	60	0.18	1.03
0.60	Dark brown 10 YR 3/3	Medium coarse clayey silt	8.16	2.26	45	0.15	1.05
1.10	Dark brown 10 YR 3/3	Medium coarse silty sand	8.13	2.26	25	0.17	1.14
1.50	Brown 7.5 YR 4/2	Fine sandy silt	8.18	1.1	33	0.16	1.65
1.90	Brown 7.5 YR 4/2	Coarse sandy silt	8.18	1.11	48	0.17	1.20
2.20	Light brownish grey 10 YR 6/2	Very coarse, shell-rich, sandy loam	8.33	0.882	70	0.14	0.57
2.50	Greyish brown 10YR 5/2	Medium coarse sandy loam	8.28	1.16	65	0.15	0.56
2.70	Brown 10 YR 4/3	Fine sandy loam	8.29	1.09	71	0.15	0.52
2.90	Brown 7.5 YR 5/2	Medium coarse sand	8.32	0.844	76	0.15	0.43
3.10	Brown 7.5 YR 5/2	Coarse sand	8.33	0.865	69	0.14	0.41
4.20	Reddish brown 5 YR 5/3	Coarse oxidized sand	8.25	0.462	40	0.14	0.40

There is a distinct break in the sequence of occupation which is apparent at a depth of 2.1 m. The shells in this layer are firmly cemented together, probably as a result of exposure and pedogenic change. This is supported by the chemical and mineral analyses of the soil as well as by X-ray diffraction studies of shells, which indicate that aragonite predominates in all the layers except at 2.1 m wherein the presence of calcite has been detected. The lower half of the mound accumulated within a period of approximately 200 years. However, there seems to be a much wider gap of over 700 years between the time when occupation on the site may have ceased (as suggested by the calcified layer) and the time when an additional metre of debris was added to the midden. It is possible that the period of abandonment spanned several centuries.

The following uncalibrated radiocarbon dates were obtained on charred as well as uncharred shells:

Depth	Age
1.1 m	1350±100 BP (BS-617)
2.2 m	2070±100 BP (BS-600)
4.5 m	2280±90 BP (BS-599)

In comparison, the age of a neighbouring shell mound (2.5 m high) is estimated to be only 329±90 BP (BS-1039). Neither of these middens has been disturbed by tidal erosion.

IVA. Molluscan Remains

At Chauldari, molluscan remains predominate throughout the sequence, whereas potsherds, stone tools, and bones of wild pig (*Sus scrofa*) are represented in relatively smaller numbers, and have a combined weight of 5 to 6 kg. Shells, on the other hand, weigh 85.5 kg (the samples for laboratory analysis represent a part of the material from each stratigraphical unit). Unbroken shells, including shell artefacts, number 7103 (34.5 kg), while fragments weigh 51 kg. The entire sample from 2.1 m, which weighs 5.3 kg, has not been taken into consideration as the components were firmly cemented and could not be separated. The respective weights of shells and soil per sample are presented in Table IV.2.

Table IV.2. Weight ratios of shell and soil from the Chauldari midden

Depth (m)	Complete shells weight (kg)	%	Broken shells weight (kg)	%	Soil weight (kg)	%	Weight of entire sample (kg)
0.50	1.8	26.47	4.0	58.82	1.0	14.70	6.8
0.60	2.5	35.71	4.1	58.57	0.40	5.71	7.0
0.90	1.3	19.40	4.6	68.65	0.80	11.94	6.7
1.1	2.6	52.0	2.1	42.00	0.30	6.0	5.0
1.3	2.5	30.48	3.2	39.02	2.5	30.48	8.2
1.5	1.9	26.76	4.1	57.74	1.1	15.49	7.1
1.7	2.8	35.0	3.6	45.0	1.6	20.0	8.0
1.9	3.1	40.25	3.5	45.45	1.1	14.28	7.7
2.2	2.5	50.0	1.9	38.0	0.60	12.0	5.0
2.5	1.5	28.84	2.9	55.76	0.80	15.38	5.2
2.7	1.8	37.11	2.3	47.42	0.75	15.46	0.75
2.9	1.5	27.27	3.2	58.18	0.80	14.54	5.5
3.1	2.4	48.48	2.4	48.48	0.15	3.03	4.95
3.5	1.9	33.92	2.6	46.42	1.1	19.64	5.6
3.9	1.7	34.69	1.8	36.73	1.4	28.57	4.9
4.2	1.1	18.96	3.2	55.17	1.6	25.86	5.9
4.45	1.6	28.57	1.5	26.78	2.5	44.64	5.6
	34.50		51.0		18.50		99.9
	(33.17)		(49.04)		(17.78)		

The shellfish taxa represented at the site are based on the identifiable species (Table IV.3).

It is clear that the highest number of shellfish are those that inhabit the littoral zone comprising the rocky, mangrove-fringed shore of Flat Bay. Thus *Saccostrea cucullata* or rock oysters account for over 50 per cent of the total collection. In the order of preferential selection and decreasing numbers, the shells of the family Veneridae number 2028 (25.02 per cent). Of these, *Marcia recens* is found on mud flats, seaward of mangrove forests, and so is *Anadara granosa* which, however, belongs to the family Arcidae. *Anadara antiquata* and *Scapharca (Cunearca) congrua* lie buried in sandy or muddy bottoms in the littoral or sub-littoral area. *Gafrarium tumidum* occurs in coarse sand among coral rubble, while *Barbatia decussata* and *Isognomon isognomon* are generally found attached to corals on reef flats. *Polymesoda coaxans* is largely a mud and mangrove dweller.

Among the gastropods *Nerita lineata* is a gregarious intertidal creature of marine rocky shores, although some species live in brackish estuaries, clinging to the trunks of mangroves. *Thais luteostoma* is also found on rocky coasts, whereas *Cerithium coralium* normally occurs on reef flats and on muddy/sandy flats.

Species that are represented by less than ten shells per taxon were probably collected at random, and constitute only 0.55 per cent of the entire collection. These shells, therefore, have not been included in the estimates of the minimum numbers of shellfish individuals per taxon per sample (Table IV.3). The minimum numbers of individuals (MNI) within the bivalve taxa were counted by dividing the number of valves into half and taking into consideration those that occurred most commonly (see Bowdler 1983:140).

There is a marked difference in the minimum numbers of individuals in the upper half of the midden, i.e. above 2 m, and in the deposits occurring below the horizon of cemented shells at 2.1 m. This difference represents a distinct break in the occupation of the site as supported by the analysis of the soil. The implications of these data for local environmental changes have already been pointed out.

Cooking Techniques and Dietary Preferences

Cooking techniques apparently varied according to the types of molluscs that were included in the diet. For example, bivalves

Table IV.3. Estimated minimum numbers of shellfish individuals per taxon per sample

Depth (m)	*Saccostrea cucullata*	*Marcia recens*	*Gafrarium tumidum*	*Anadara granosa*	*Anadara antiquita*	*Scapharca (Cunearca) congrua*	*Barbatia decussata*	*Polymesoda coaxans*	*Isognomon isognomon*	*Nerita lineata*	*Cerithium coralium*	*Thais luteostoma*	Total
0.5	53	37	24	17	8	40	4	1	0	0	3	0	187
0.6	197	44	48	13	2	28	0	2	1	1	2	0	338
0.9	109	45	11	10	6	3	0	1	0	4	7	1	197
1.1	132	32	17	46	47	71	0	3	0	2	2	1	353
1.3	140	67	18	38	16	44	0	2	0	1	0	0	326
1.5	74	75	18	18	3	19	0	2	4	1	4	0	218
1.7	109	45	22	26	11	17	4	8	19	1	17	1	280
1.9	95	61	25	33	17	10	10	5	34	3	10	2	305
Cemented layer													
2.2	190	21	61	7	12	2	7	8	1	51	1	3	364
2.5	129		54	5	4	0	3	6	1	43	16	2	282
2.7	135	20	96		11	2	1	7	4	65	17	4	366
2.9	192	9	13	6	2	1	4	0	2	187	12	3	431
3.1	418	59	7	2	1	0	2	0	1	13	3	1	507
3.5	364	26	10	1	0	0	2	1	2	48	8	1	463
4	174	10	22	0	0	0	2	3	1	62	1	1	276
4.2	233	31	10	1	1	0	3	0	1	24	9	0	313
4.45	106	24	45	4	2	1	1	1	1	13	4	1	203

belonging to the families Arcidae and Corbiculidae were cooked in their own shells by being placed upon a heap of burning logs for the purpose of parting the valves (Man 1883:345). The flesh was then removed and boiled before being eaten. It is possible that oysters were also cooked in a similar manner, especially since their valves are difficult to open. This might explain the abundance of charcoal and ash in the lower layers of the Chauldari site and of the midden near Beehive Hill (for a description of the latter, see Cipriani (1966) who, however, does not mention whether oysters predominated in the basal layers). The relatively small quantities of charcoal in the upper layers at Chauldari could tentatively be attributed to the occurrence of a high percentage of species of the Arcidae and Veneridae families, the flesh of which is known to have been boiled. The shells of these bivalves, particularly those of *Marcia recens*, are not large or very strong and can be easily opened with a sharp instrument.

There is evidence for the prevalence of a traditional bias in the subsistence strategies pertaining to sea foods. For instance, Man (1883:267) has reported that the consumption of oysters was confined mostly to the inhabitants of North Andaman and perhaps to Little Andaman. In this regard, it seems that Jarawa middens could be distinguished by the existence of certain shellfish species that were not exploited by the other groups of Andaman Islanders (Man 1883:267; Cipriani 1966:78).

The Jarawa were supposed to have descended from migrants from Little Andaman, whose language was quite distinct from that of the Great Andamanese (Radcliffe-Brown 1922:13,14). It is interesting to note that until the eighteenth century, Port Blair, including a major part of South Andaman, constituted Jarawa territory. It is possible, therefore, that the Chauldari midden represents an ancient Jarawa encampment.

Shell Artefacts Mentioned in Ethnographic Literature on the Andamans

At this juncture, a review of the shell tools mentioned in the ethnographic literature on the Andamans (Table IV.4) would help in delineating the functions of the artefacts from Chauldari. As these literary sources are fairly old, e.g. Man (1878b, 1882, 1883, 1932),

Table IV.4. Shell artefacts mentioned in ethnographic literature

Type of mollusc	Uses	Literary source
Cyrena (*Polymesoda coaxans* Gmelin)	*Knife*	
	a. for cutting thatching leaves and cane, thread and rope	Man (1883:376); Radcliffe-Brown (1922:447)
	b. for making incised patterns on bows and arrows	Man (1883:370); Radcliffe-Brown (1922:447)
	c. for cutting joints of meat	Man (1883:376)
	d. for severing the umbilical cord after the birth of a child	Man (1932:18)
	e. for splitting open the seeds of jackfruit	Cipriani (1966:40)
	Scraper	
	a. for shredding *Tetranthera* wood (shavings are held in the hands or placed in the belt or headdress while dancing)	Man (1878b:460); Radcliffe-Brown (1922:447)
	b. separating the bark from the fibres of the *Anadendron paniculatum*, *Melochia velutina*, *Hibiscus tiliacus*, *Gnetum edule*, and *Calamus tigrinus* (the fibres are used for making rope and string, while *Calamus* is used for making mats)	Man (1883:376); Radcliffe-Brown (1922:447)

(Contd.)

Table IV.4 (Contd.)

Type of mollusc	Uses	Literary source
	c. extracting the pulp of the *Pandanus* fruit	Man (1932:158)
	d. shaping bows and arrows	Man (1883:376); Radcliffe-Brown (1922:435); Cipriani (1966:83, 86)
	e. sharpening bamboo and cane knives and the inner edge of a boar's tusk which is used as a spokeshave	Man (1883:376); Radcliffe-Brown (1922:448)
	f. scraping clean a newly born infant	Man (1932:18); Radcliffe-Brown (1922:90)
	Spoon	
	a. for eating the gravy of pork and turtle	Man (1883:376); Radcliffe-Brown (1922:447)
	b. for pouring water over a wound after which the shell is heated and applied to the wound	Man (1932:19)
	c. for opening another bivalve	Man (1883:345, 376)
	d. for applying paste on the binding of arrows	Radcliffe-Brown (1922:447)
Whelk shell (unidentified)	*Scraper*—to remove the outer skin of mangrove seeds which are cooked and eaten	Radcliffe-Brown (1922:447)

(Contd.)

Table IV.4 (Contd.)

Type of mollusc	Uses	Literary source
Bivalve found in mangrove swamps (probably *Isognomon isognomon*)	'The weak edge or tip of the valve is broken away and the edge is then slightly ground on the stone. This implement is used by women for slicing yams and other vegetables.'	Radcliffe-Brown (1922:447)
Arca (probably *Anadara granosa* Linne and *Anadara antiquata* Linne)	Used for scraping clean the outer surface of pots	Man (1883:374); Radcliffe-Brown (1922:473)
Perna eppiphium	Valves were shaped into arrowheads	Man (1883:377)
Tridacna sp.	a. Valves were shaped into arrowheads which are reported to occur in middens	Cipriani (1966:86)
	b. cooking vessel (?)	Stoliczka (1870:16)
Nautilus sp.	Drinking vessel	Man (1883:377); Radcliffe-Brown (1922:475)
Pinna sp.	a. container for food or clay b. adze	Man (1883:377); Radcliffe-Brown (1922:475)
Turbo marmoratus	Used as cooking vessel (?)	Stoliczka (1870:16)
Dentalium octogonum	Beads	Man (1883:372); Radcliffe-Brown (1922:480)

(Contd.)

Table IV.4 (Contd.)

Type of mollusc	Uses	Literary source
Hemicardium unedo	Beads	Man (1883:372)
Freshwater gastropods (unidentified)	Beads	Man (1883:372)
Columella of gastropod	Ground on side to form 'spatula' used for shaping pottery (?)	Dutta (1978:22)
External lip of large gastropod	Scraper (?)	Dutta (1978:22–3)

the identification of shells is confined to generic terms or those denoting the family, but not the species. As most of these terms are out of date, currently used scientific names have been mentioned in parentheses whenever possible.

Notes on Some Molluscs Mentioned in Table IV.4

1. Predominant among these is the *Polymesoda coaxans* (Gmelin), which is identified by Man (1883:376) and Radcliffe-Brown (1922:447) as *Cyrena*. Man (1883:533–34) has provided a list of shells known to the Andamanese, who seem to have been acquainted with three varieties of *Polymesoda* which were locally called *ji.rka-u*, *vo.kta* (supposed to be eaten by married persons only), and *u*. An intimate knowledge of the environment is demonstrated by the fact that for shaping their bows, the Onge used a freshwater species of *Polymesoda* which was tougher than other bivalves (Cipriani 1966:83). The shell functioned as a knife, scraper, and spoon, and formed an essential part of men's hunting gear (Man 1883:363). Small wonder then that it was always 'to be found lying about their [Andaman Islanders'] encampments' (Radcliffe-Brown 1922:447). The bivalve appears to have been primarily utilized for a wide range of wood-working activities, inspiring Man (1883:376) to observe 'that among their savage [*sic*] arts there is probably nothing so calculated to surprise and interest a stranger as the many and clever uses to which necessity has taught them to put this simple but highly effective tool'.

The use of the *Polymesoda* was not restricted to either sex when it was meant to serve as a spoon, and in regard to activities such as splitting jackfruit seeds, processing the fibres of the *Anadendron paniculatum* (used in the manufacture of bowstrings, reticules, necklaces, and twine for arrow fastenings), extracting the pulp of the *Pandanus* fruit, as well as cauterizing wounds. However, tasks such as the cutting of thatching leaves, shredding *Tetranthera* wood, butchering animals, making bows and arrows, and sharpening bamboo knives and the inner edge of a boar's tusk in order to use it as a spokeshave were generally undertaken by men. The ubiquity of this bivalve is best reflected in the pleasure it afforded young men, when testing their powers in throwing long distances, to send shells of

P. coaxans 'skimming through the air', the convex side being held uppermost (Man 1883:387).

With regard to activities that were performed exclusively by women, using the *P. coaxans* involved severing the umbilical cord after the birth of a child, cleaning newly born infants, and preparing the fibre of the *Gnetum edule* for the manufacture of fishing nets and sleeping mats. As these items were made only by women, the collection and processing of the trailers of *G. edule* were entirely their responsibility. On the other hand, it was the duty of the male members of a group to procure branches of the *Melochia velutina*, the fibres of which were utilized in making cinctures, harpoon lines, and turtle nets.

There are two noteworthy aspects of the value in which *P. coaxans* was regarded: first, important though it was as an artefact, it was nevertheless expendable, as this species is a mud and mangrove dweller and would have been easily available since a major part of the coastline of the Andamans is fringed by mangroves; in areas where this mollusc was not readily accessible, it was usually obtained through the inter-group barter system. This probably explains its presence throughout the sequence at Chauldari, albeit in negligible quantities, which is significant, especially in regard to the consistent occurrence of differential wear patterns on the margins of the specimens in question.

Second, in terms of its symbolic value, a *Polymesoda* shell was placed in one of the hands of a dead person at the time of burial, presumably to help the deceased in the afterlife; the bivalve was replaced by a steel knife after the establishment of the British penal settlement in 1858, when metal was easily available (Radcliffe-Brown 1922:106). During the performance of certain ritual dances, one of these bivalves was held by a male dancer (Radcliffe-Brown 1922:165). In addition, we are informed that when swimming in shark-infested waters, shells of this species were attached to belts along with fibres of the *Anadendron paniculatum* in the belief that they frightened sharks away (Man 1883:384). Even medicinal properties were attributed to the *Polymesoda*, the heated shell of which was used to cauterize a wound caused by a thorn, stone, or shell. In this regard, the protective power of an object was considered to be commensurate with its importance in 'social life' (Kuper 1977:86).

2. It is doubtful whether the shell of the *Pinna* sp. was robust enough to serve as an adze. In 1986, while reviewing several ethnological collections, I had the opportunity to examine three arrowheads of shell from the Andamans. One of these artefacts belongs to the C. Anderson collection from the Andamans now reposing in the American Museum of Natural History, New York (index card no. 592), while the other arrowheads are from the A.R. Radcliffe-Brown collection in the Field Museum of Natural History, Chicago (the index card number for both is 151892). In spite of the fact that the shells could not be identified, it was obvious that they would have been effective only as heads for fishing arrows and not for pig arrows as no. 592 is supposed to be. The shells have been ground and sharpened to form leaf-shaped points that are too slender and fragile for killing large game.

There are two shell knives in the W.L. Abbott collection of the National Museum of Natural History, Smithsonian Institution, Washington, D.C. The index card for these artefacts (no. 164779) describes them as belonging to the *Pinna* sp., although this cannot be verified as the knives represent only a part of the valve.

3. It is interesting to note that certain shells not only provided the Andamanese with delicate ornaments, but also lent beauty to larger species such as the Nautilus which is used as a drinking vessel and bailer even today. One such specimen from the British Museum (A.S. 51: Oldman collection) has beautiful designs executed on the outer surface with red ochre, and is attached to strings of *Dentalium* shells, the ends of which are tied to a few bivalves by means of thread. The entire object is so elaborate and decorative that in all likelihood it was meant to be a gift. This is not surprising when one considers the fact that it was customary for different groups to trade essential items from time to time and to exchange gifts. This practice helped to strengthen family ties and minimized inter-group rivalry and aggression.

It may be noted that the museum collections referred to above are relatively old: W.L. Abbott visited the Andaman Islands in January 1901, C. Anderson in 1907–8, while the expedition of the Field Museum was undertaken in 1909–10 (see Appendix I for more details on museum collections).

4. Although 115 valves of *Isognomon isognomon* have been found at Chauldari, it is impossible to discern any evidence of use since most of the shells are unevenly broken as a result of their fragility.

Artefacts from Chauldari: Method of Analysis

From the present collection of 7103 bivalves and gastropods, only 177 (2.49 per cent) shells exhibit evidence of deliberate modification and/or use. There are in all 45 artefacts, including 17 *N. lineata* and 22 bivalves, which appear to have been accidentally charred. It is to be expected that a single trench would not yield all the species mentioned in Table IV.4, nor would it provide data on the entire range of molluscs that were exploited for food and other purposes. However, some of the shells used as artefacts at Chauldari are similar to those listed in Table IV.4, though the functions of others have, hitherto, not been recorded. Table IV.5 illustrates the preferential selection of molluscs that have served as artefacts.

Table IV.5. Percentage of occurrence and selection of bivalves and gastropads for the manufacture of artefacts

Genus/Species	Total no. of bivalves & gastropods	Percentage of occurrence	No. with evidence of use*	Percentage of selection
Saccostrea cucullata Born	4061	50.11	–	–
Marcia recens Wood	110	13.69	–	–
Gafrarium tumidum Roding	910	11.23	39	4.28
Marcia hiantina Lamarck	8	0.09	–	–
Anadara granosa Linne	407	5.02	18	4.42
Anadara antiquata Linne	246	3.03	3	1.21
Scapharca (Cunearca) congrua Say	404	4.98	21	5.19
Barbatia decussata Sowerby	73	0.09	2	2.73
Isognomon isognomon Linne	115	1.41	1	0.86
Polymesoda coaxans Gmelin	76	0.93	59	77.63

(Contd.)

Table IV.5 (Contd.)

Genus/Species	Total no. of bivalves & gastropods	Percentage of occurrence	No. with evidence of use*	Percentage of selection
Solecurtidae (?) (Fam.)	3	0.03	3	100
Brachidontes sp.	2	0.02	–	–
Asaphis violascens Forskal	1	0.01	–	–
Nerita lineata Gmelin	519	6.40	28	5.39
Cerithium coralium Kiener	116	1.43	–	–
Thais luteostoma Holte	21	0.25	–	–
Neritina violacea Gmelin	9	0.11	–	–
Monodonta labio Linne	7	0.08	–	–
Nassarius pullus Linne	4	0.04	–	–
Cantharus rubiginosus Reeve	5	0.06	1	20.0
Chama sp.	4	0.04	–	–
Turbo (lunella) cinereus cinereus Born	1	0.01	–	–
Volema cochlidium Linne	1	0.01	–	–
	7103		175	

*.These do not include the two columellas, as the species to which they belong cannot be identified.

The artefacts under study have been divided into four major typological categories, which include perforated molluscs that were apparently used for ornamental purposes:

1. Bivalves with use wear on their margins—62 (35.02 per cent).
2. Bivalves with broken margins—48 (25.98 per cent).
3. Perforated shells consisting of 38 bivalves and 29 gastropads—67 (37.85 per cent).
4. Columellas—2 (1.2 per cent).

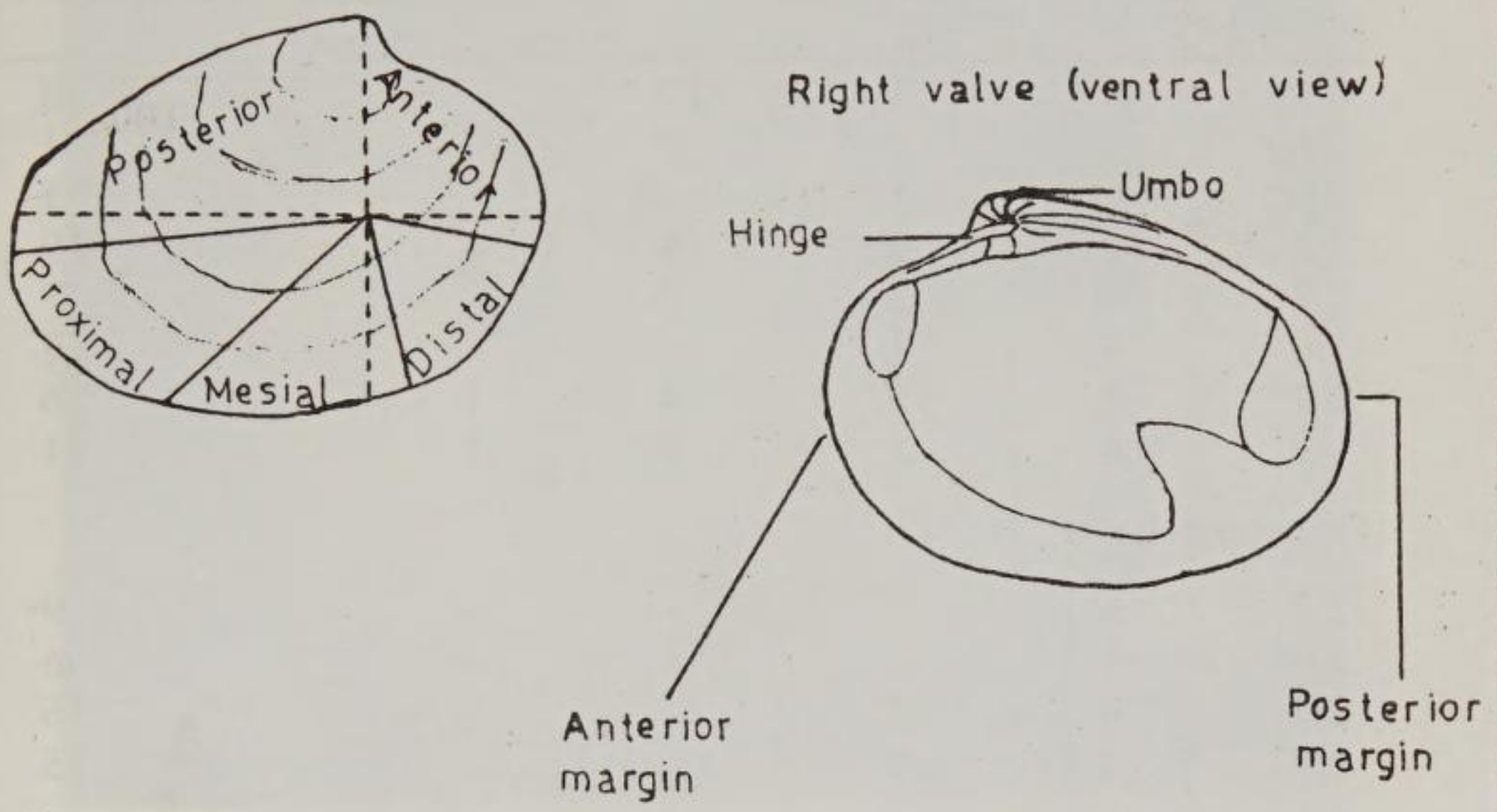

Fig. IV.2. Parts of a bivalve shell

Alterations on valves were taken note of with regard to their occurrence on the dorsal and ventral faces. The dorsal side was divided into anterior and posterior sections. The lower portion, which is referred to as the medial region, was subdivided into proximal, mesial, and distal parts as Fig. IV.2 illustrates.

Table IV.6 presents a depth-wise distribution of the four major categories of artefacts from Chauldari.

Bivalves with Use Wear

Two patterns of wear have been distinguished so far, and these feature margins that are worn smooth, and those that bear a succession of breaks or blows resulting in a denticulated edge. There are 41 artefacts with worn edges and 21 with denticulated margins. The former category is represented by 30 *P. coaxans* (Fig. IV.3), 5 *G. tumidum*, 2 *B. decussata*, 3 *A. granosa* and 1 *A. antiquata*; while the latter comprises 15 *P. coaxans*, 3 *Solecurtidae*, 2 *G. tumidum*, and 1 *A. antiquata*.

Table IV.6. Main categories of shell artefacts from Chauldari midden

Depth (m)	Bivalves (use wear)	Bivalves (broken margins)	Perforated shells bivalves	Perforated shells gastropods	Columellas	Total
0.50	–	1	17	–	–	18
0.60	2	2	7	–	–	11
0.90	–	1	–	–	–	1
1.1	12	2	5	–	–	19
1.3	3	2	2	–	–	7
1.5	3	1	–	–	1	5
1.7	8	3	4	1	–	16
1.9	6	1	3	1	–	11
Cemented Layer						
2.2	9	–	–	–	–	9
2.5	6	–	–	–	–	6
2.7	6	2	–	6	1	15
2.9	1	2	–	12	–	15
3.1	–	–	–	–	–	–
3.5	3	1	–	2	–	6
4.0	1	3	–	–	–	4
4.2	–	2	–	7	–	9
4.5	2	23	–	–	–	25
Total	62	46	38	29	2	177
			= 67			

a. In numerous valves, particularly those of *P. coaxans*, the dorsal surface along the used edge is worn smooth or chipped off. This is probably because the scraping or cutting motion was directed away from the body, and also because the shell was generally held with the 'thumb passing over the convex side and the finger round the hinged edge' (Radcliffe-Brown 1922:447). This was not always the case, however, for a photograph taken by M.V. Portman at the end of the nineteenth century shows an Andamanese scraping the bark off a stem in the process of manufacturing an arrow. The shell is clasped in the right hand with the inside nearest the wood, and the accompanying text describes it as being pulled towards the operator. This might explain the partially flaked ventral as well as dorsal surfaces of three *P. coaxans* shells and one valve of *A. antiquata*. It is

Fig. IV.3. *Polymesoda coaxans* valve showing denticulation on posterio-mesial portion of margin

interesting to note that species of the genus *Polymesoda* were widely used as artefacts in South-East Asia. For example, in New Guinea, as in the Andamans, shells of this type were used for sharpening bamboo knives (Man 1932:156). Similar shell artefacts exhibiting gloss or polish through use have been reported from Arnhem Land in Australia (Schrire 1982:63, 95, 129) as well as from Timor (Glover 1986:75, 151–3).

b. On 3 valves of *G. tumidum* and 2 of *A. granosa*, the wear in the medial region extends to the dorsal surface, thus making it quite smooth. With regard to the latter species, the medial portion has become concave, probably as a result of abrasion produced by scraping clean the outer surface of pottery, as mentioned in Table IV.4. In fact, some of the designs of parallel lines on potsherds from Chauldari could also have been rendered with the help of such bivalves. This was the case with some of the motifs on ceramics of the Kalanay Culture (central Philippines) which were 'stamped with the edge of an *Arca* shell' (Bellwood 1978:214).

c. In all cases it was found that the right or left valve does not determine the position, type, or extent of damage on the margin of a shell. At present, it is not possible to attribute various patterns of wear to specific movements or activities. Nevertheless, gradations of wear can be observed to range from slightly serrated to heavily denticulated edges or those that are simply worn smooth. It is not unusual to find a margin that is partly worn and partly denticulated. These signs of utilization could either represent different stages of use or may be interpreted as resulting from the fact that certain bivalves were dual purpose tools, serving both as cutting implements and as scrapers, particularly artefacts of *P. coaxans*.

Valves with Broken Margins

There are 46 artefacts in this category (32 of *G. tumidum* and 14 of *P. coaxans*) (Fig. IV.4).

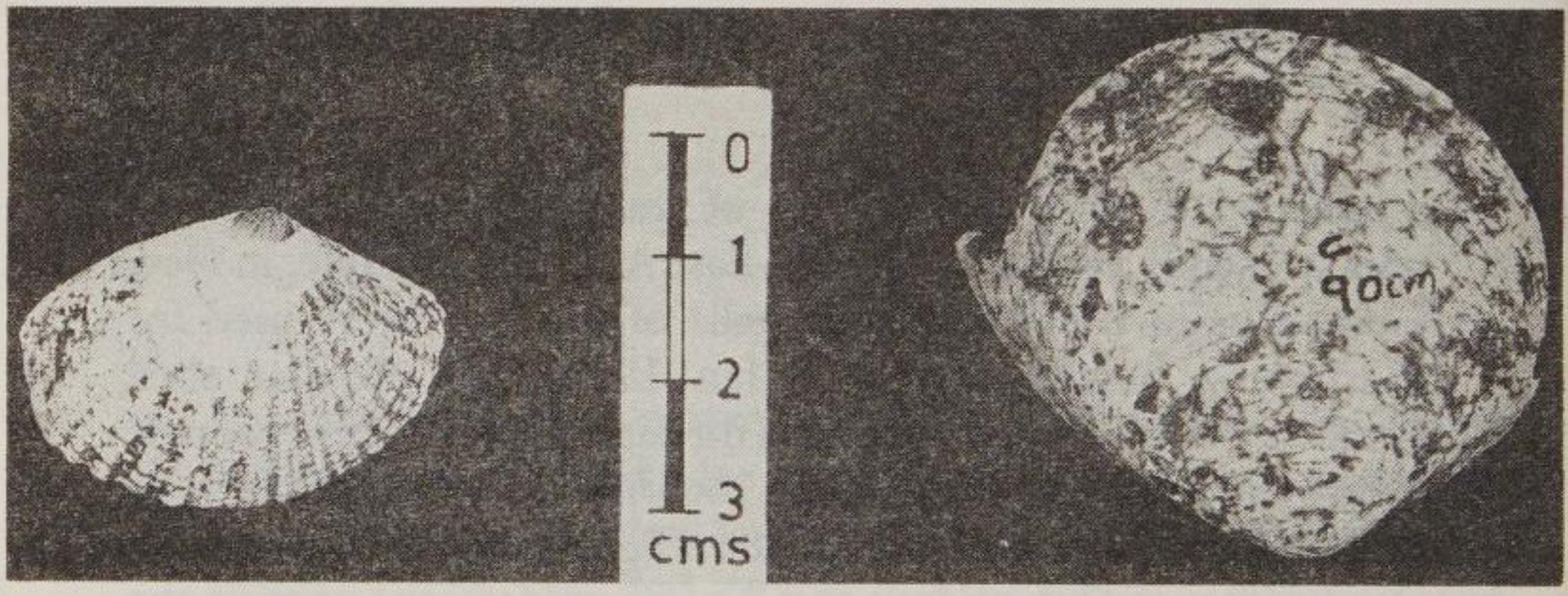

Fig. IV.4. Left: *Gafrarium tumidum* valve with entire margin broken; Right: *Polymesoda coaxans* valve showing broken margin with end of hinge forming a projection

a. The edges of most shells with partially broken margins display evidence of utilization such as serrations and denticulations. This suggests that excessive pressure or natural impact invariably caused the edge to snap.
b. In the collection from the Andamans presented by A.R. Radcliffe-Brown to the Field Museum of Natural History, Chicago,

there are two specimens of *Polymesoda*. One of these (no. 151888) is meant to have been used as a knife, scraper, and spoon, while the other (no. 151889) was supposed to have been broken at the margin, which would be shaped to form a point for making incised patterns on bows. Regarding the latter, however, nothing relevant has been mentioned in published accounts of the material culture of the Andamanese. For the present, therefore, it is perhaps safe to assume that the same species of *Polymesoda* was used for two or more different functions, and that the fourteen *P. coaxans* valves without margins, recovered from the Chauldari midden, may have been deliberately broken at the edges. It is also possible that the projections formed by the hinges were used as points or perforators. It is interesting to note that of the 4 edges of *Polymesoda* valves, 2 are denticulated, 1 is blunt and forms a perfect lunate, while the last is only half a margin. This suggests that parts of margins or entire margins that were eliminated in the course of use were reused for a different purpose, if considered suitable. In this context, one cannot rule out the possibility that the sharp-pointed projections formed by transverse and longitudinal breakages in seven of the *G. tumidum* valves served as perforators or were used for making incised patterns on various objects.

Perforated Shells

In this category, the deposits after the break in occupation yielded mostly bivalves, while gastropods predominate in the lower half of the midden. The bivalves (21 *S.(C.) congrua*, 15 *A. granosa*, 1 *A. antiquata*, and 1 *I. isognomon*) are characterized by holes on or near the umbo, which resulted from scratching away the surface prior to or in the process of gouging it.

Among the 29 gastropods, all except one belong to *Nerita lineata* (Fig. IV.5). Most of these are represented by apertures, necklaces of which are still worn by Jarawa men and women. In fact, the shells of a variety of gastropod species are used for personal adornment. It is important to note that out of the collection of 519 *N. lineata* shells, 506 (97.49 per cent) were recovered from the layers below 2 m of the Chauldari midden, which accounts for the preponderance of the perforated specimens in this section. This is the only instance, in this site, where the total number of shells of a particular mollusc,

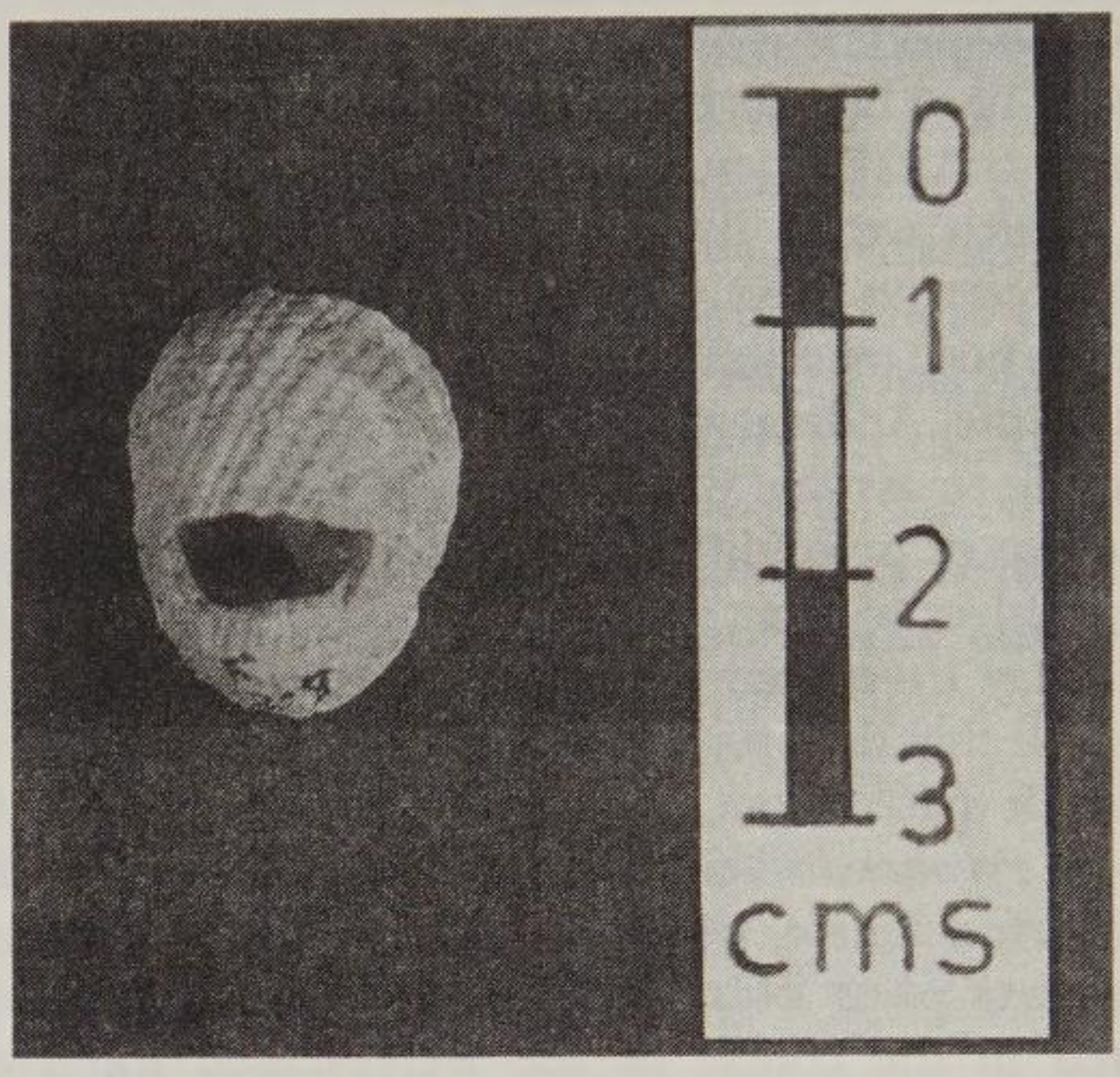

Fig. IV.5. *Nerita lineata*—perforated

which are concentrated within certain archaeological deposits, seem to have influenced the percentage and distribution of artefacts that were made from them (*Saccostrea cucullata* and *N. lineata* comprise 76.34 per cent of the sample from the lower levels). On the whole, however, all the bivalves and gastropods, with the exception of *P. coaxans*, were primarily exploited for food, and some of the shells were used as artefacts only after the removal and consumption of the flesh. In this connection, it may be noted that the collection of shellfish for food was undertaken by women, as also the manufacture of ornaments of shell, fibre, or any other material (Man 1883:330; Radcliffe-Brown 1922:44).

Discussion

The 108 artefacts identified by the use-wear on their margins and by broken edges clearly demonstrate the preferential selection of molluscs for cutting and scraping purposes. The 59 valves of *P. coaxans* account for 33.33 per cent of the total number of shell tools recovered so far. Considering the effectiveness of these artefacts in practically all tasks involving cutting and scraping, it is perhaps not

so surprising that the excavation at Chauldari yielded only twelve stone implements. This suggests that molluscs played a significantly greater role in the economy of the Andamanese than did stone or other raw materials, excluding plant resources, of course.

Admittedly, our understanding of the technology involved in the fashioning of shell artefacts has been limited by the paucity of experimental research in this direction (but see Akerman 1975; Cleghorn 1977; Kenoyer 1983; Francis 1982; and Semenov 1964).

IVB. Artefacts of Bone, Stone, and Glass

Vertebrate Faunal Remains

The weight of bones excavated from Chauldari is 3.2 kg. In all, there are 197 pieces, of which 168 (85 per cent) belong to wild pig (*Sus scrofa*). Among these, 118 (73.24 per cent) were recovered from the lower levels (2–4.5 m). These included thirty two charred bones of *S. scrofa*, which accords well with the preponderance of charred shells in the lower horizons. The remaining bones belong to a variety of animals, including the dog, monitor lizard, rodents and, possibily, a primate. In regard to the latter, it may be noted that the crab-eating monkey (*Macaca fascicularies umbrosa*) is found only in the Nicobar Islands, whereas the dog was introduced to the Andamans in the last century.

Various types of teeth constitute the most commonly occurring element among the bones of *S. scrofa*. Other bones include humeri, ulnae, radii, tibiae, calcanea, metacarpals, tarsals, vertebrae, rib fragments, and parts of the femur. The frequency distribution of these bones is presented in Table IV.7.

The size differences of the bones observed so far can be attributed to differences in age and/or sex, and not to the existence of larger and smaller species of pig. The issue concerning the introduction of pigs to these islands is examined in Chapter VII.

Bone Tools

As with the molluscan remains, the artefacts of bone are the by-products resulting from the processing of various faunal species that contributed to the local diet.

Table IV.7. Frequency distribution of bones of *Sus scrofa* from Chauldari

Depth (m)	Teeth	Parts of skull	Parts of mandible	Vertebrae	Scapulae	Ribs	Humeri	Radii	Ulnae	Parts of pubis	Femurs	Patellae	Tibiae	Calcanea	Metatarsals	Metacarpals	Metapodials	Phalanges	Synsacrum	Long bone fragments	Total
0.5	3			2		3	1									1	1				11
0.6																2					2
0.9		1				2						1									5
1.1	2		1				1	1				1	2		3	2		2		1	15
1.5	1					1			1		1							2			6
1.7	1							2			1		1								6
2.2	6																				5
2.5				1	5	2	5	3	2					4	3	8	2	1	2	1	39
2.7					1	2	2	2	6					3	3	2	1				23
3	4			2	1		5	4	1		2			2	3	2	4			1	30
4	4	1	1		1	2	2		4	1	2			1	2	2	2				26
	21	2	2	5	8	12	16	12	14	1	6	2	13	11	17	14	2	6	1	3	168
%	12.5	1.19	1.19	2.97	4.76	7.14	9.52	7.1	8.33	0.59	3.57	1.2	7.73	6.54	10.12	8.33	1.19	3.57	0.59	1.78	

The twelve artefacts (6.09 per cent of the total bone collection) are evenly distributed throughout the sequence (Table IV.8). Six of these are barbs and have been chiselled out of pig and rodent incisors as well as long bone fragments (Figs. IV.6, IV.7, IV.8). The others are pointed tools or gouges that represent pieces of the ulna, tibia, radius, and femur of *S. scrofa*.

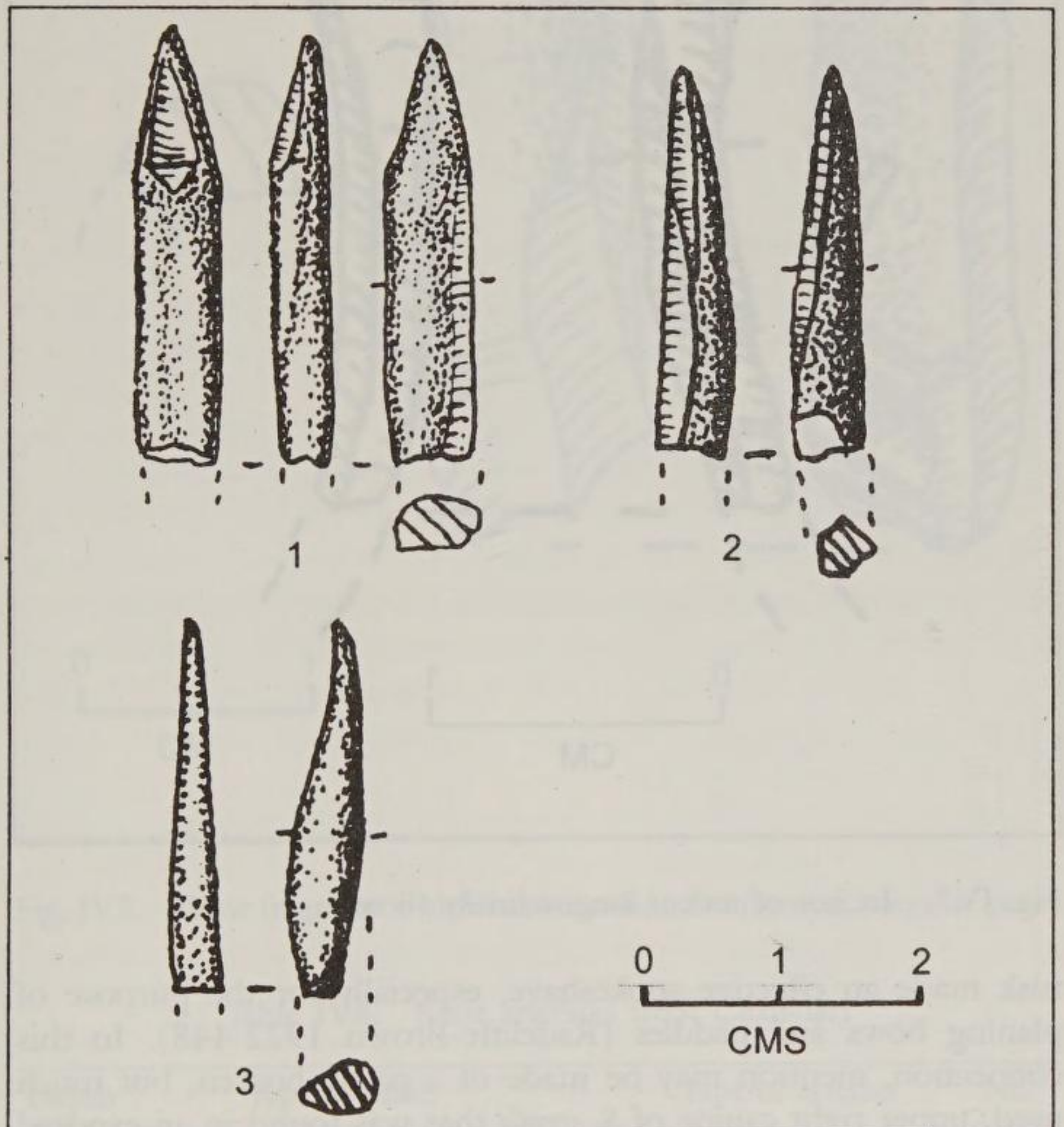

Fig. IV.6. Nos. 1 and 2—bone points; no. 3—flaked incisor of wild pig (*Sus scrofa*)

The barbs were in all likelihood fashioned by men for their arrows, whereas the gouging tools may have been shaped by men as well as women. Just as incisors could function as barbs, a boar's

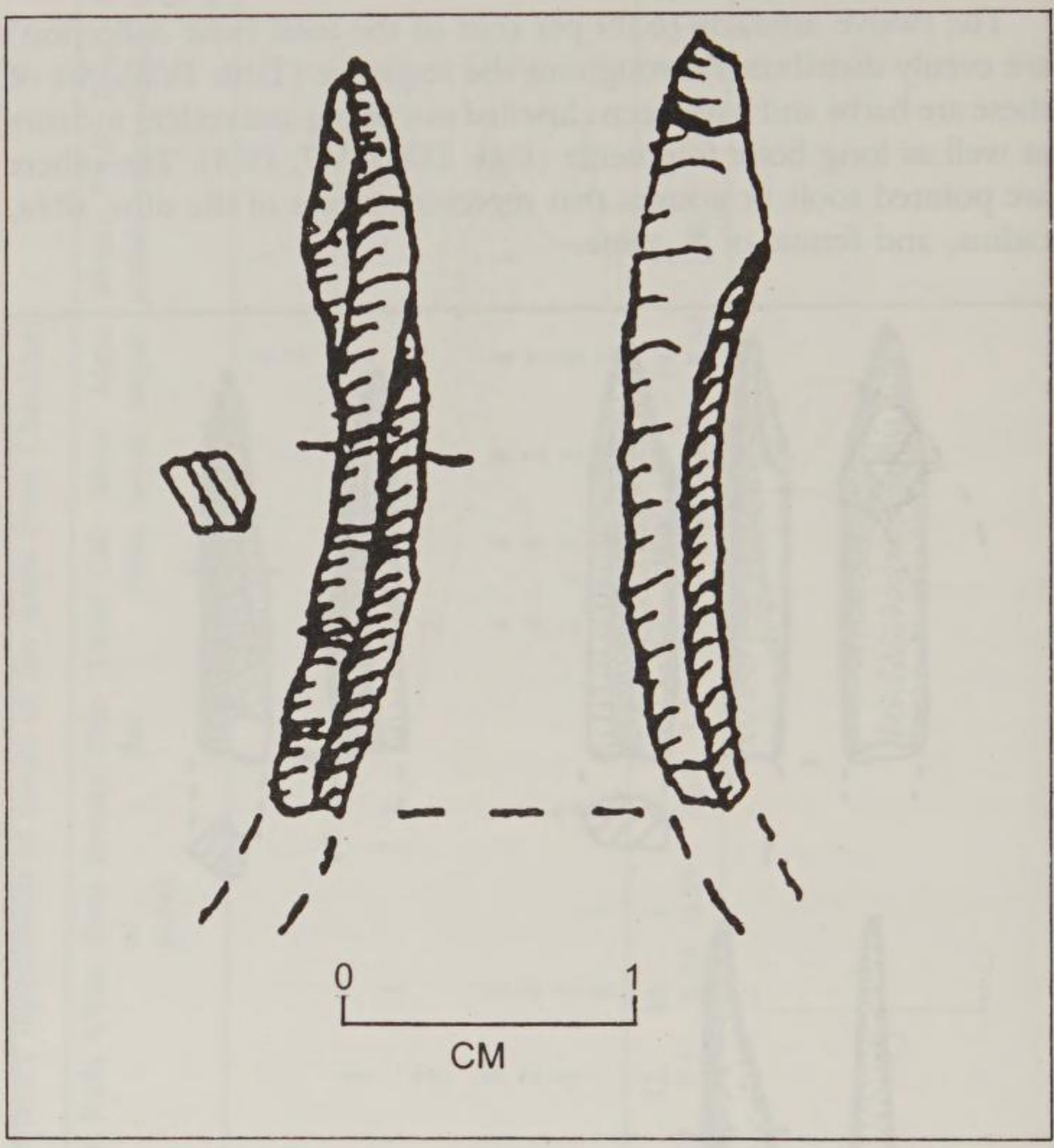

Fig. IV.7. Incisor of rodent longitudinally sliced

tusk made an effective spokeshave, especially for the purpose of planing bows and paddles (Radcliffe-Brown 1922:448). In this connection, mention may be made of a partly broken, but much used, upper right canine of *S. scrofa* that was found in an exposed section of the midden near Beehive Hill, on Middle Andaman Island (Cooper 1987:90). Interestingly, such teeth were sharpened with a quartz flake or a *Polymesoda* shell.

Among the other bones from Chauldari is the vertebra of a monitor lizard from a depth of 1.1 m. Not only did these reptiles form a part of the local diet, but their vertebrae were strung into necklaces.

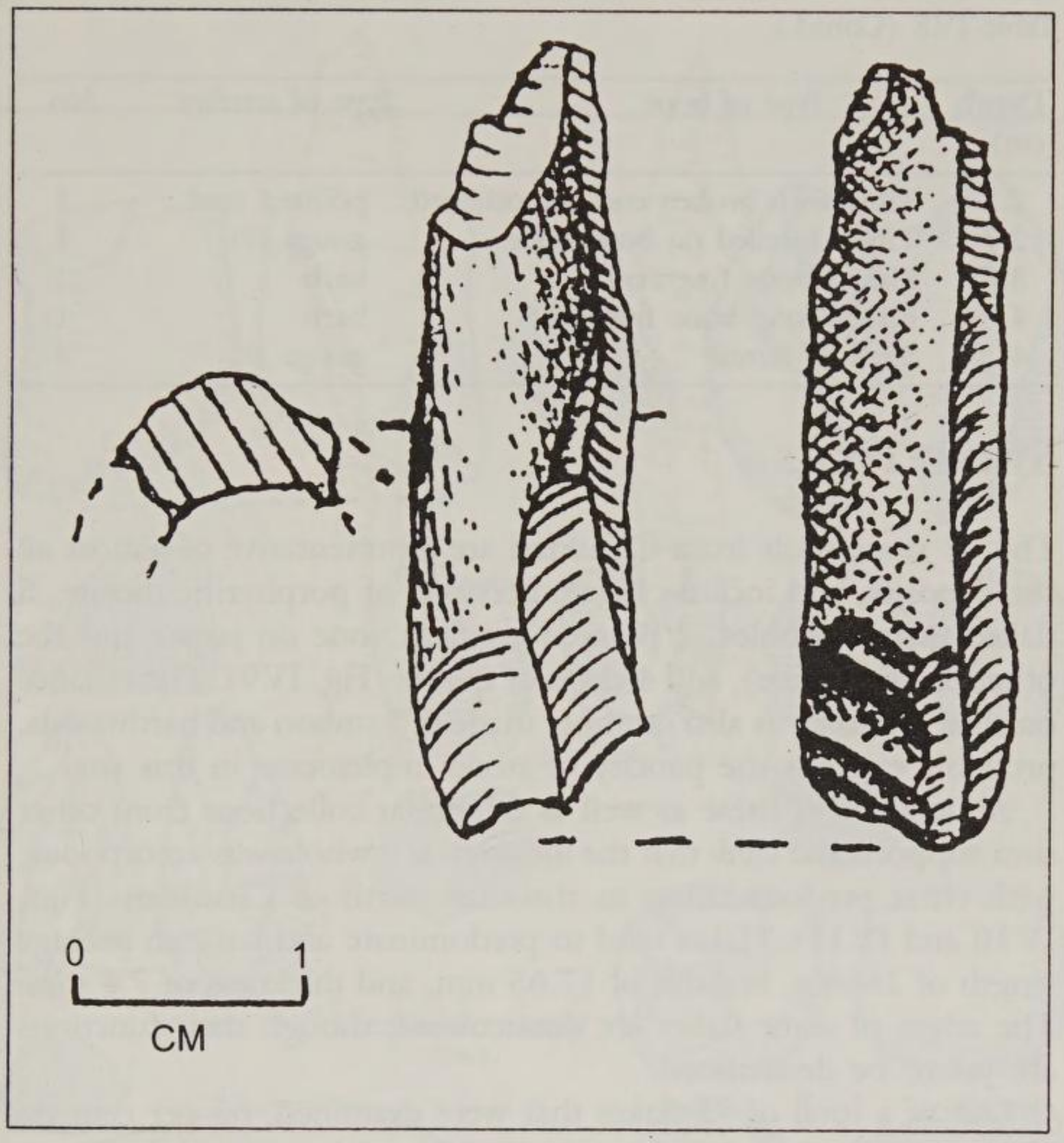

Fig. IV.8. Bone fragment which has been flaked to form an irregular point

Table IV.8. Bone artefacts from Chauldari

Depth (m)	Type of bone	Type of artefact	No.
0.6	Rodent incisor	barb	1
0.9	Flaked bone fragment	barb	1
1.5	Pig incisors	barb (?)	2
1.5	Proximal part of an ulna	pointed tool	1
2.3	Radius shafts cut horizontally	pointed tool	2

(Contd.)

Table IV.8 (Contd.)

Depth (m)	Type of bone	Type of artefact	No.
2.7	Tibia with broken end smoothened	pointed tool	1
2.7	Tibia chiselled on both sides	gouge (?)	1
3.7	Flaked bone fragment	barb	1
4	Flaked long bone fragment	barb	1
4	Shaft of femur	gouge (?)	1

Stone Tools

The 12 stone tools from Chauldari are representative of almost all the deposits, and include 1 hammerstone of porphyritic diorite, 5 flaked quartz pebbles, 2 pointed artefacts (one on jasper and the other on serpentine), and 4 chips of quartz (Fig. IV.9). The reliance on shell artefacts, as also on those made of bamboo and hardwoods, probably explains the paucity of stone implements in this site.

An analysis of these as well as of similar collections from other sites supports the view that the industry as a whole was amorphous, with chert predominating in the sites north of Chauldari (Figs. IV.10 and IV.11). Flakes tend to predominate and have an average length of 25 mm, breadth of 17.65 mm, and thickness of 7.4 mm. The edges of some flakes are denticulated, though their functions are yet to be determined.

Out of a total of 75 flakes that were examined, 65 per cent do not exhibit any bulb of percussion, while on the rest, the bulbs are either diffuse or hardly perceptible. This feature can be explained by the fact that flakes were crudely struck off with the help of another pebble and were used without being shaped or retouched (Fox 1878:446; Man 1883:380; Radcliffe-Brown 1922:444; Cipriani 1966:147). In fact, a flake was seldom used more than once and was promptly discarded if it broke or became blunt. Thus a stone-knapper may produce as many as 40 flakes in order to obtain 20 that could be considered suitable (Radcliffe-Brown 1922:445). Although Man (1883:380) records the process of flake removal after quartz pebbles were heated and allowed to cool, the present collection does not reveal any evidence of heat treatment.

Flakes with sharp edges were generally used for shaving purposes, for cutting fingernails and sharpening boar's tusks, while those that

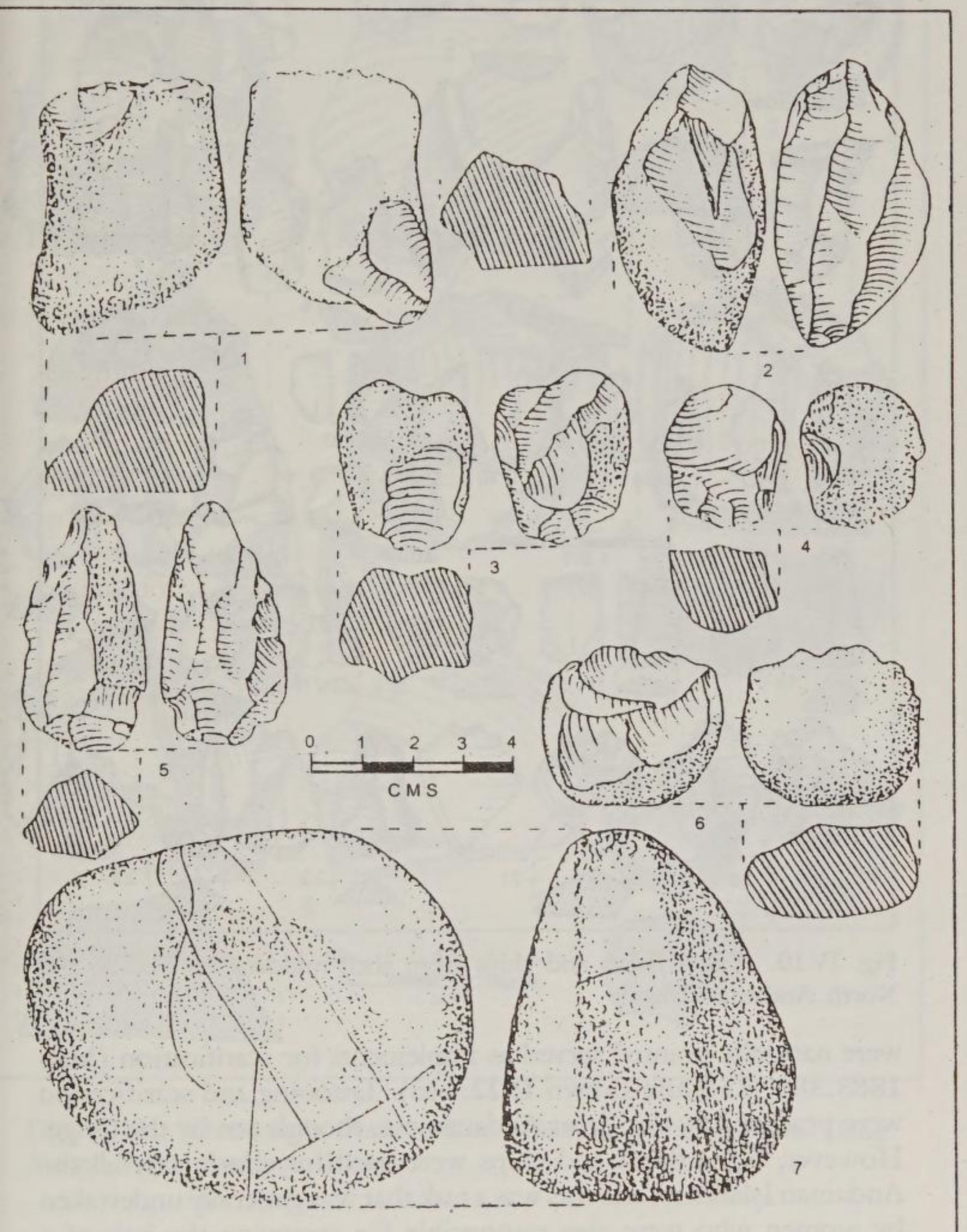

Fig. IV.9. Stone tools from Chauldari

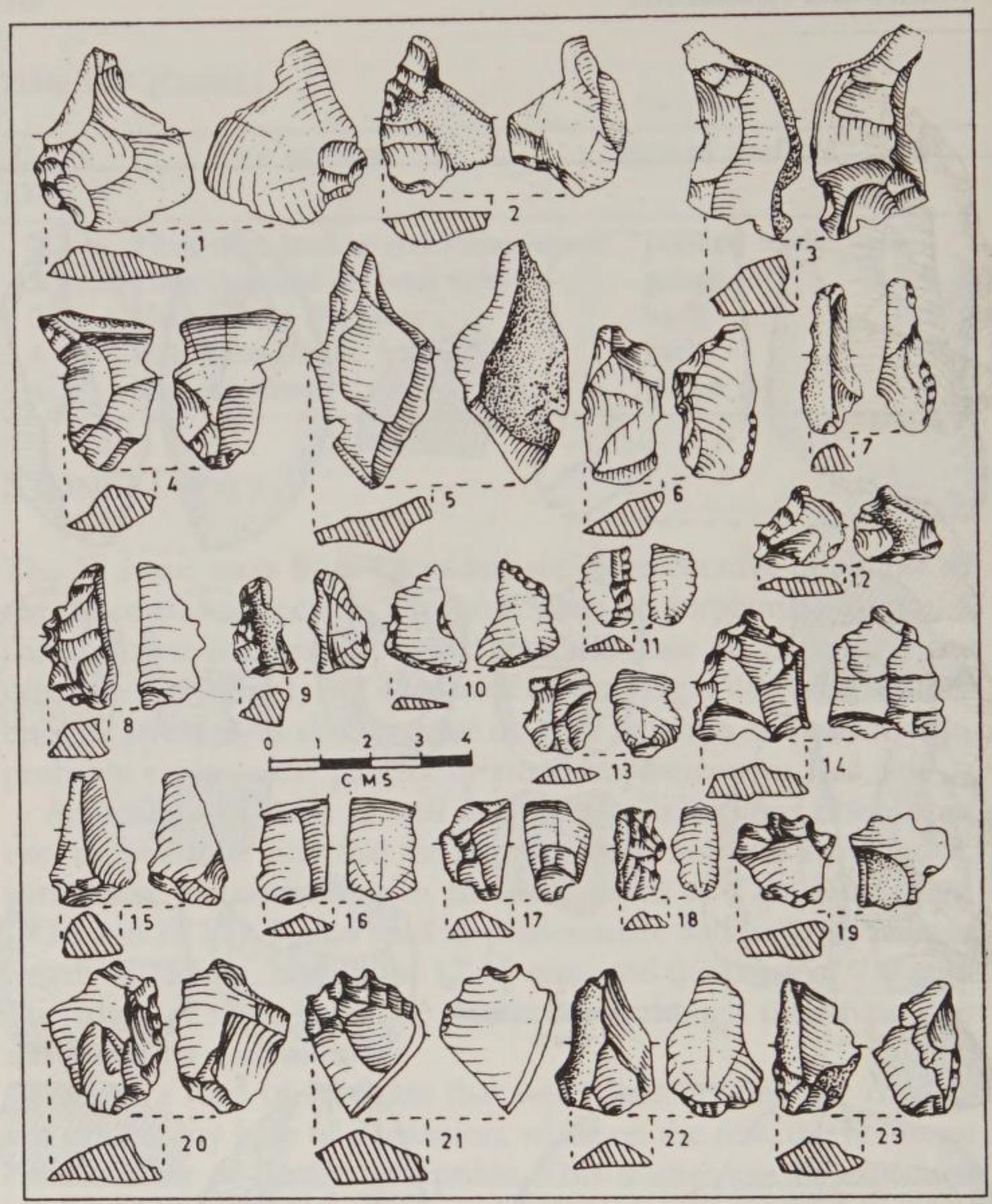

Fig. IV.10. Chert flakes and chips from shell middens on Middle and North Andaman Islands

were naturally pointed served as implements for scarification (Man 1883:380; Radcliffe-Brown 1922:445). Tattooing and scarification were practised by the Great Andamanese, though not by the Onge. However, stone flakes and chips were used for shaving by all the Andaman Islanders, and this was a task that was generally undertaken by women who were also responsible for removing the hair of a newly-born child (Man 1883:334–5, 380). Among the southern groups (Bojigngiji),

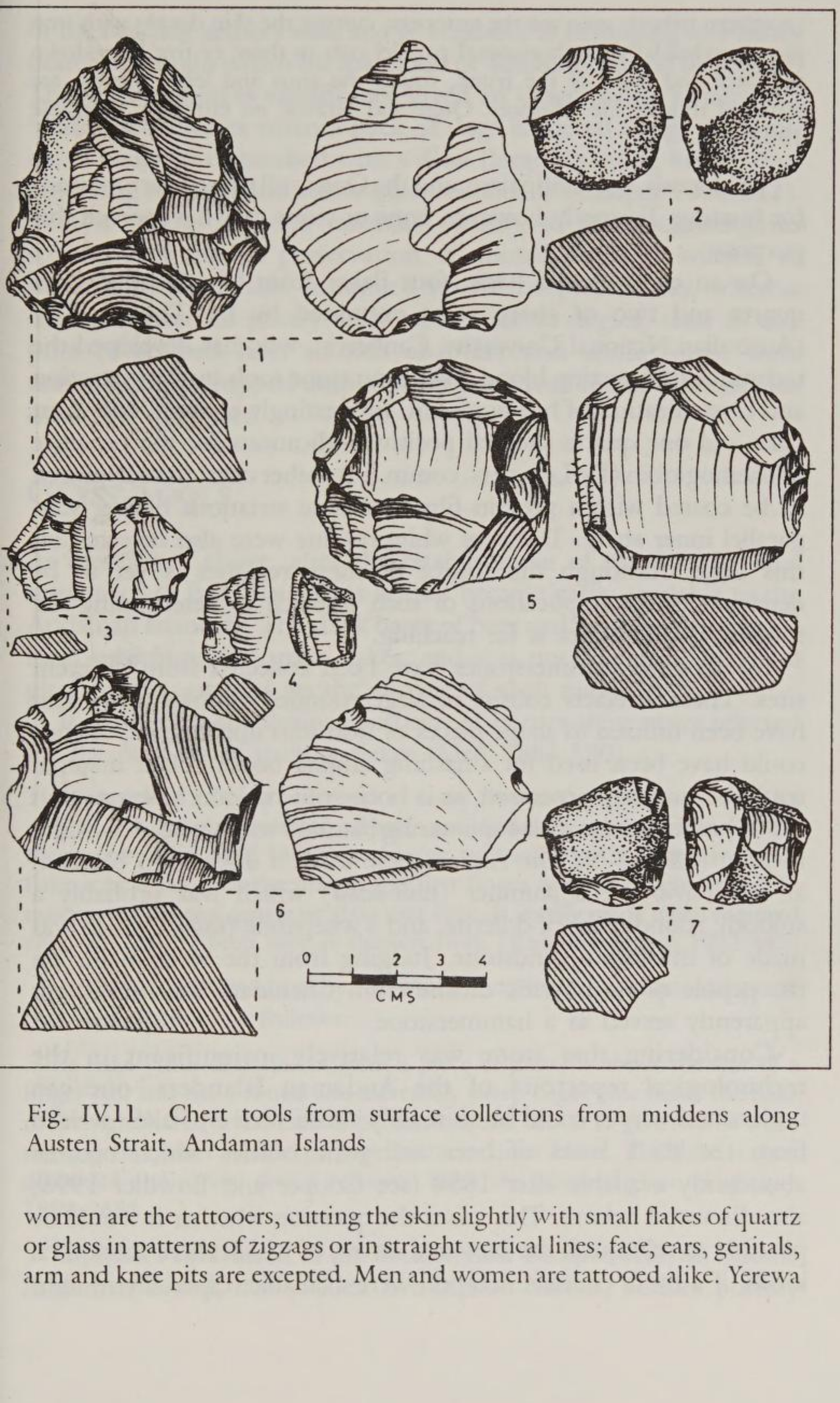

Fig. IV.11. Chert tools from surface collections from middens along Austen Strait, Andaman Islands

women are the tattooers, cutting the skin slightly with small flakes of quartz or glass in patterns of zigzags or in straight vertical lines; face, ears, genitals, arm and knee pits are excepted. Men and women are tattooed alike. Yerewa

(northern tribes): men are the tattooers, cutting the skin deeply with iron pig-arrowheads: short horizontal parallel cuts in three or five lines down the back and front of the trunk, round the anus and legs. Women are tattooed thus as life advances. Onge and Jarawa: no tattooing. [Temple 1903:50]

The Jarawa, the Sentinalese, and the Onge still use iron arrowheads for hunting. Formerly, however, bone or stone may have served this purpose.

On an experimental basis, four flakes from Chauldari, two of quartz and two of chert, were examined by Dr Thomas Loy (Australian National University, Canberra), who has developed the technique of detecting blood residue on stone tools by the extraction and crystallization of haemoglobin. Interestingly enough, one chert flake and one quartz showed positive indications for the presence of haemoglobin (Dr Loy, pers. comm.). Another chert flake appeared to be coated with a protein film and bore striations having sub-parallel inner striae. Traces of white residue were also detected on this flake. Although the source of these residues is yet to be determined, the implications of such research in determining the functions of artefacts is far reaching.

In all, three hammerstones have been collected from different sites. These artefacts consist of large rounded pebbles that could have been utilized to shape pieces of iron into implements, or they could have been used for smashing animal bones. Plant material could be similarly processed, as is borne out by Vaux's observation (1902) of the Andamanese splintering bamboo with stone. According to Man (1883:379), the Andamanese made a distinction between an anvil (*rarap*), a hammer (*taili-baba*) which was probably a smooth, round piece of dolerite, and a whetstone (*talag*) which was made of micaceous sandstone. Judging from the wear marks on the pebble of porphyritic diorite from Chauldari, the implement apparently served as a hammerstone.

Considering that stone was relatively insignificant in the technological repertoire of the Andaman Islanders, one can understand why it could be so readily substituted by flakes derived from the thick bases of beer and wine bottles which became abundantly available after 1858 (see Cooper and Bowdler 1998; also discussed below). This raises the question whether it would be possible to relinquish the bow and arrow, of which there are several kinds, if a more effective weapon were available, especially in light

of the fact that archery was, and is, regarded as belonging to a man's domain through which his manhood or adulthood could be proven. This query assumes significance given an Onge hunter's statement 'that in some cases when a pack of dogs cornered a pig, the latter could easily be dispatched with a *dhou* (large chopping knife), thus rendering the bow and arrow quite redundant' (Cooper 1994:242).

It is interesting that customs relating to the socio-religious sphere, such as the preservation of animal skulls as witness to successful hunts, have continued up to the present day, whereas objects concerned purely with subsistence strategies, such as clay pots (described later in this chapter) and stone tools, were unhesitatingly dropped despite having survived in the economy for over two millennia.

Glass Tools

As mentioned above, after the establishment of the British penal settlement at Port Blair, glass bottles became easily available to the Andaman Islanders. The thick bases of beer and wine bottles formed ideal substitutes for stone flakes, and it is not uncommon to find glass pieces scattered on the surface of shell middens.

It seems that the thinner portions of bottles were never selected for the purpose of making flakes (Man 1883:380).

> The bottom of a bottle is treated in every way as though it was a quartz pebble, a flake being knocked off and used, and then another and so on till the operation in hand (whether shaving or scarifying) is completed. The flake is held between the thumb and first finger when it is being used. In no case is a flake of quartz or glass ever kept. It is only made when required and after having been used is thrown away. [Radcliffe-Brown 1922:445]

An earlier observation by the French explorer Lapicque supports this description, as follows:

> ...the flake (after detachment from a piece of glass) is about the size of a finger-nail and has a round and extremely sharp edge. One holds the flake in the right hand, at the bulb of percussion, and uses it to give two or three shaving cuts, after which the edge becomes quite blunt. The flake is then discarded and a new one is removed from the piece of glass. [Lapicque 1894:368]

Cipriani's excavation of the midden near Beehive Hill, on Middle Andaman Island, had yielded five human burials, besides pottery

and flakes of what he mistook to be obsidian (Cipriani 1966:75). I conducted a careful search of the surface of the midden as well as of the exposed sections, but did not find any obsidian splinters, though pieces of glass and stone flakes were fairly abundant (Cooper 1990b:100). Here it may be noted that there is no source of obsidian in the Andamans.

Although glass flakes replaced those made of stone for the purpose of scarification and shaving, glass lost its importance in the economy of the Andaman Islanders after 1947, when plastic and aluminium containers and metal implements became more easily available. This is shown by the study of abandoned Onge encampments in South Bay, Little Andaman Island (see Chapter VI). Discarded glass bottles (formerly containing oil or other substances) littered these sites, but none of the bottles had been used for the manufacture of artefacts. Moreover, observations of activities in occupied camps yielded no evidence to that effect.

Archaeological Examples

Andaman Island sites containing glass are most numerous around Port Blair and the places where the so-called homes of the Andamanese were established. For example, Lapicque (1894:364) noted bases of glass bottles among other objects in an abandoned encampment in South Andaman. Although the 'homes' no longer stand, the beaches of Ross Island, which overlooks Port Blair and was once the headquarters of the British penal settlement, are strewn with colourful pieces of glass rubbed smooth by abrasion. Most of these have resulted from natural breakage, although some may have ended up on shell middens, not only for cutting purposes but also perhaps for their aesthetic value. In view of this, it was necessary to exercise caution in reporting such material, especially since some middens around Port Blair were contributed by Burmese convicts. Therefore, the sites described here have been selected because of their distance from Port Blair, and only those that have been carefully examined and sampled by me are discussed here.

Among the glass artefacts collected from the midden at Beehive Hill, there are 8 flakes and 20 chips (Cooper 1987:172). Seven of the flakes are of green glass and 1 is of white glass. A few of them are partially flaked. The chips are all of green glass.

Two glass pieces that bear evidence of working were recovered by me from the surface of a site near Lakhimpur in North Andaman Island and from a midden on Swamp Island in Austen Strait (Fig. IV.12). The piece from Lakhimpur has a convex surface which is partly flaked to form a sharp edge. The glass flake from Swamp Island is roughly diamond shaped and is flaked along the edges on the dorsal surface. The ventral side, along the straight edge, is also flaked.

Examples of glass artefacts have also been reported from the Indian subcontinent. A core from the base of a moulded beer bottle has been reported from a surface collection at Talaechamet (along the Mahabaleshwar–Mahad road in the state of Maharashtra). The earliest date for such a bottle is seventeenth/eighteenth century AD, and it is considered to indicate a late survival of a microlithic industry. 'The villagers and the local people, in Mahableshwar, confirm this by recalling that these microlithic sites were at one time the camping sites of tribal people. The industry is geometric in character' (Malik 1959:50). In another instance, geometric microliths made of chalcedony, jasper, and sometimes of bottle glass were found in the rock shelters of Adamgarh, central India (Khatri 1964:759). No pottery was found in association with the microliths, thus confirming the persistence of a foraging economy in isolated areas, contemporaneous with urban settlements in the adjoining valleys.

> What is interesting . . . is the way that the technological processes recorded from the Andaman Islands describe exactly archaeological specimens from very widely separated parts of Australia, namely, the extreme north, the extreme west, and the extreme southeast. Obviously this is not to imply any kind of cultural connection. What it would seem to illustrate is that there are fundamental processes involved in flaking (knapping) behavior, and that people familiar with these will react similarly when new materials are made available to them. Perhaps future, more extensive collections might allow more detailed technological comparative studies. [Cooper and Bowdler 1998:81]

IVc. Pottery Manufacture in the Andamans

The tradition of making pottery is of particular interest, not only in view of the fact that the economy of the Andaman Islanders is

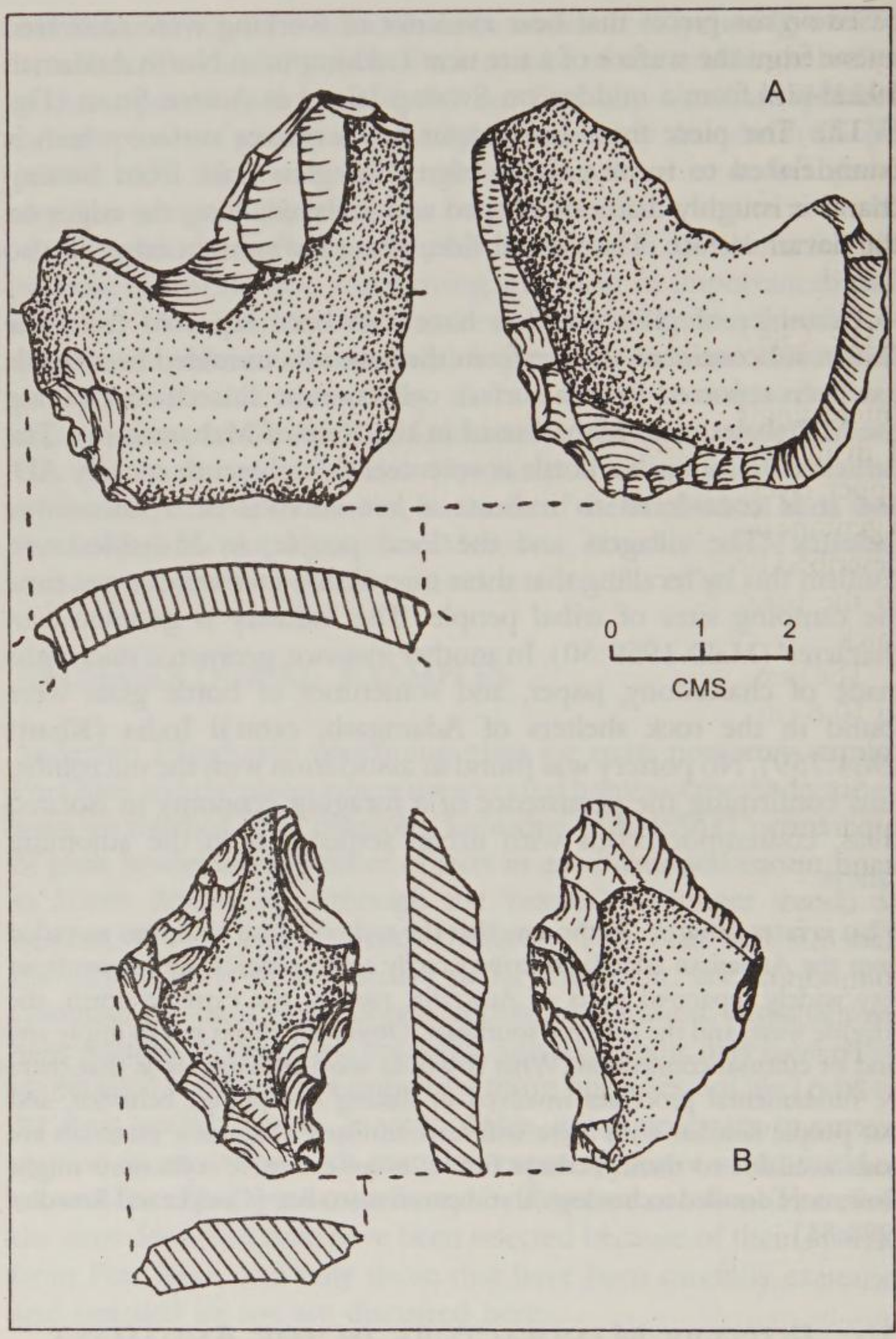

Fig. IV.12. A: Flaked glass piece from Lakhimpur, North Andaman Island; B: Glass flake from Swamp Island, Andaman Islands

based on foraging, but also in the light of a reported absence of the knowledge of making fire (Man 1883:150; Radcliffe-Brown 1922:472).

The first step towards elucidating the role of pottery in the Islanders' society requires delineation of the morphological characteristics of the pottery from various islands (Cooper and Raghavan 1989).

The Chauldari Potsherds

Interestingly enough, potsherds were present only below a depth of 1 m in the midden, which may be due to the disturbance of the upper layers as a result of recent human and animal activity, or to a genuine decrease in pottery usage in recent times. The 97 potsherds described herein were collected from a depth of about 1.5 m down to the basal level, which represents a section approximately 3 m thick.

The maximum dimensions of these potsherds range from 1.6 cm to 10.6 cm (average 5.3 cm), with a mean thickness of 0.7 cm. The colours vary from brown to reddish yellow.

Six of the pieces are from the pointed bases of pots which were apparently shaped in this manner so that they could be made to stand upright in sandy ground (Fig. IV.13, nos. 4 and 8). It may be noted, however, that this feature does not accord well with Radcliffe-Brown's (1922:473) observation that such forms are common in North Andaman, while the pots from South Andaman are thicker and have rounded bases.

The percentage of incised sherds out of all sherds from Chauldari is 20.61, the designs consisting mostly of sets of parallel lines executed with the edges of shells or with sharp sticks (Fig. IV.13, nos. 5, 6, 7). As suggested by Fox (1878:444), such ornamentation bears a close resemblance to the basketwork casing in which pots were generally carried. With the exception of one sherd, all are incised only on their outer surfaces. Two pieces exhibit patterns of thumb impressions (Fig. IV.13, nos. 2 and 3), while three others comprise rims of pots which have been delicately notched or stamped (Fig. IV.13, no. 1).

Ethnographic reports suggest that these pots generally served as cooking vessels, although some smaller ones were used as containers

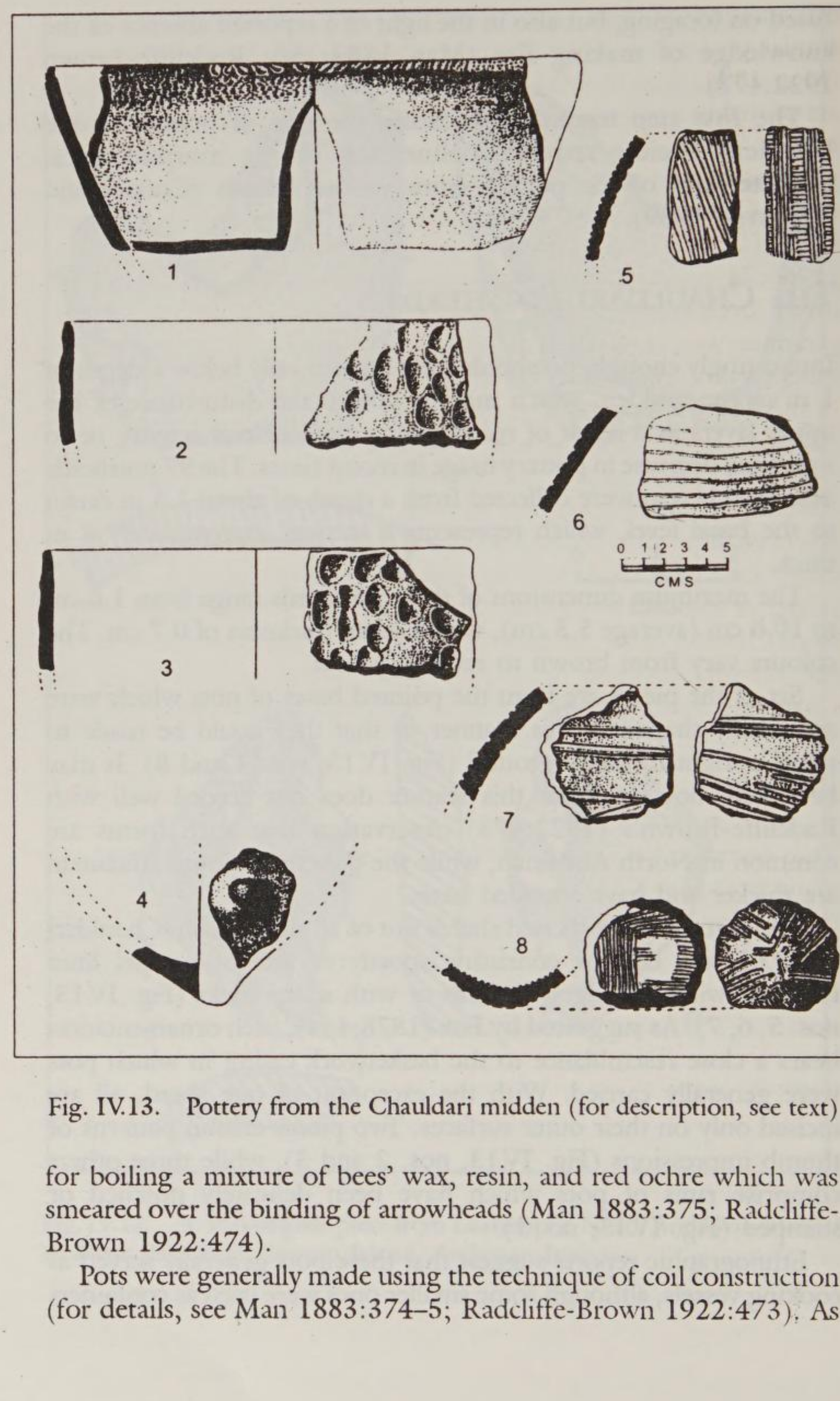

Fig. IV.13. Pottery from the Chauldari midden (for description, see text)

for boiling a mixture of bees' wax, resin, and red ochre which was smeared over the binding of arrowheads (Man 1883:375; Radcliffe-Brown 1922:474).

Pots were generally made using the technique of coil construction (for details, see Man 1883:374–5; Radcliffe-Brown 1922:473). As

this method of manufacture appears to be a cruder version of a similar process practised on the island of Chowra in the Nicobars (Man 1894; Reddy 1981), it may tentatively be assumed that the art of making pottery was introduced to the Andamans from these islands. The adoption of this innovation took place at a fairly early stage, as suggested by the occurrence of potsherds in the basal layers of the Chauldari midden, for which a radiocarbon date on marine shell of 2280±90 BP (BS-599) has been obtained. Thus Cipriani's (1966:74–5) suggestion, based on the absence of pottery in the lower levels of the midden at Beehive Hill, Middle Andaman, that ceramics were a fairly late introduction to the Andamans, is no longer valid. This is particularly so in view of the fact that the age of the Beehive Hill site is no more than 1400±100 BP (PRL-1237) (Cooper 1990b:100).

A rather puzzling feature that is characteristic of pottery from the Andamans is that it appears to degenerate in quality in the upper layers of the midden sites. This trend from finer to coarser ware was noted by Man (1883:373) as well as by Cipriani (1966:74) with reference to pottery from the midden near Beehive Hill. The pottery from Chauldari also shares this trait, and in order to define precisely the seeming decline in quality, representative potsherds from Chauldari have been subjected to petrological analysis.

Petrological Analysis of Chauldari Pottery

Thin sections were made from 13 potsherds representative of the main stratigraphic units of the exposed eastern flank of the shell mound. Small pieces, measuring approximately 2 x 2 cm, were cut from each sherd and subjected to a test in order to determine porosity. This was done by weighing each sherd and then saturating it in water for two hours, after which the sherds were re-weighed and the volume determined by displacement. The calculation of porosity is based on the formula given by Shepard (1957:127).

The thin sections were examined under a Carl-Zeiss Jenapol petrological microscope. Table IV.9 presents the major petrographic characteristics and porosity percentages for the potsherds from Chauldari, together with 3 sherds from a midden at Wrafter's Creek on Baratang Island, and 2 from sites in North Andaman (Fig. IV.14). These last five are surface finds and have been included here

Table IV.9. Micromorphological analysis of Andamanese potsherds

Sample number	Depth (m)	Clay matrix	Coarse to fine fraction ratio of quartz	Coarse and fine fraction to matrix ratio	Porosity (percentage of volume)
Chauldari					
1	1.5	Iron oxide	8:2	7:3	0.06
2	1.5	Goethite	9:1	7:3	0.03
3	1.5	Iron oxide+ Limonite	5:5	7:3	0.11
Cemented calcified layer					
4	2.1	Goethite	4:6	6:4	0.03
5	2.1	Goethite	4:6	6:4	0.05
6	2.7	Hematite+ Goethite	4:6	5:5–6:4	0.09
7	2.7	Hematite+ Limonite	7:3	6:4	0.09
8	2.7	Hematite+ Goethite	6:4	7:3	0.09
9	3.0	Hematite	3:7	4:6	0.12
10	3.0	Hematite+ Limonite	7:3	6:4	0.04
11	3.0	Hematite	3:7	4:6	0.07
12	4.0	Goethite+ Hematite	3:7	3:7	0.09
13	4.0	Limonite	2:8–3:7	4:6	0.07

(Contd.)

Table IV.9 (Contd.)

Sample number	Depth (m)	Clay matrix	Coarse to fine fraction ratio of quartz	Coarse and fine rraction to matrix ratio	Porosity (percentage of volume)
Midden at Wrafters Creek, Baratang Island					
14	1	Hematite	6:4	4:6	
15	2	Hematite	6:4	4:6	
16	3	Hematite	7:3	4:6	
North Andaman					
17		Hematite	3:7	4:6	
18		Hematite	6:4	6:4	

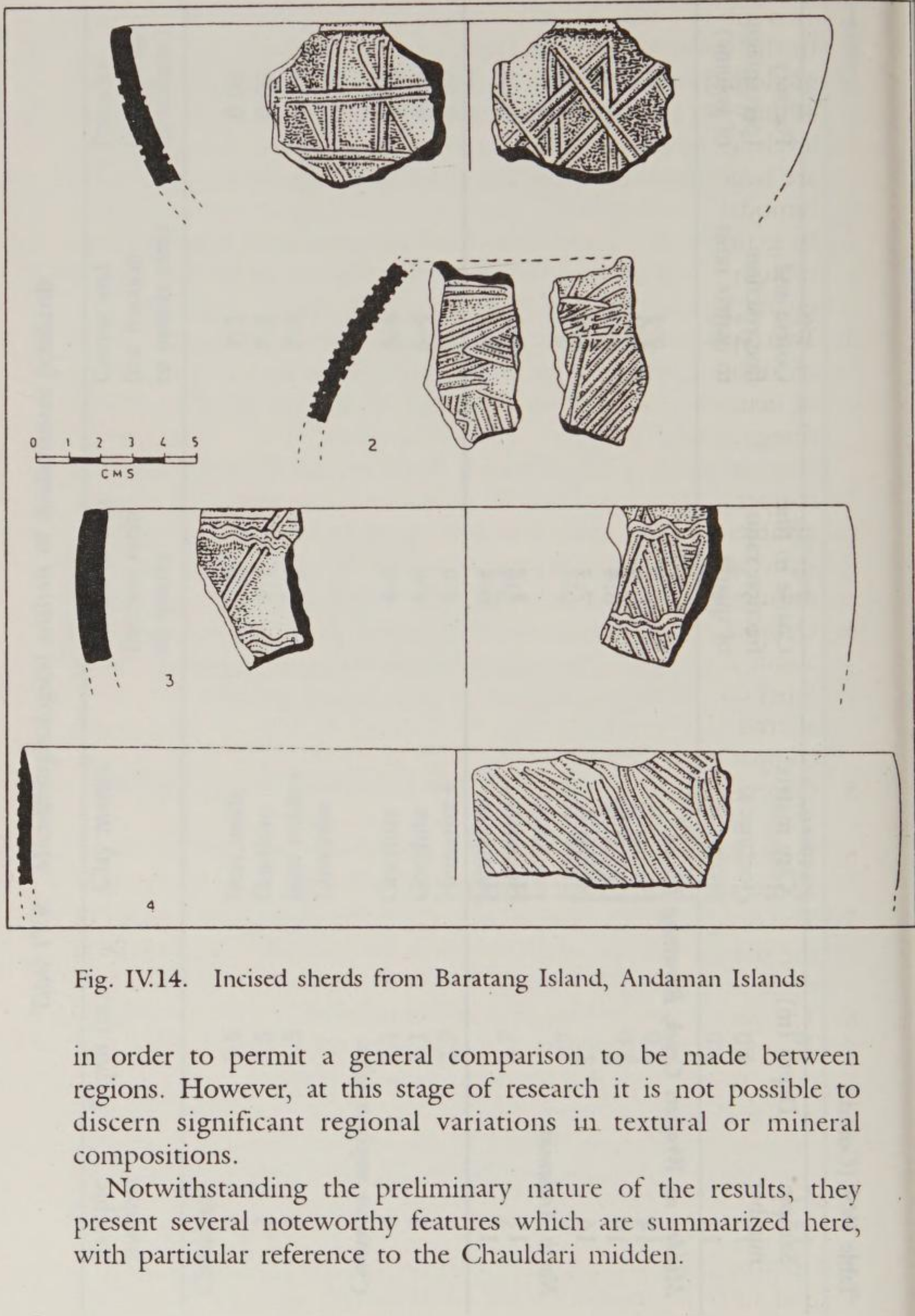

Fig. IV.14. Incised sherds from Baratang Island, Andaman Islands

in order to permit a general comparison to be made between regions. However, at this stage of research it is not possible to discern significant regional variations in textural or mineral compositions.

Notwithstanding the preliminary nature of the results, they present several noteworthy features which are summarized here, with particular reference to the Chauldari midden.

1. Two sub-populations of quartz grains have been found to occur. In the lower layers of the site, i.e. from 3–4 m, the pottery is predominantly fine-grained, the sizes of the grains ranging from 40 μm to 110 μm. Coarse-grained ware dominates in the upper levels; grain sizes vary from 120 μm to 200 μm and some grains are larger than 200 μm. The grain-size frequency is, therefore, bimodal.
2. In general, the grains tend to be sub-angular to sub-rounded, though the coarser material is well rounded. Some of the fine quartz grains are frosted and stained by iron.
3. Two types of matrices can be identified. One of these is composed of limonite, the other of an iron oxide which may be a mixture of hematite and goethite. Minerals of the iron oxide group in fine-grained clay form pseudo-grains which are sub-angular to very well rounded. The ratio of clay matrix to the coarse and fine temper fraction varies from 7:3 to 3:7. In places the matrix exhibits micro-fracture and flow structure, and traces of cellular structures represent vegetal materials which have burned out during firing.
4. Orthoclase feldspars and muscovite are present, and vary from about 2 per cent (by number of grains) in the upper layers to 5 per cent in the lower. Some of the muscovite flakes are slightly altered. The percentages of these minerals were determined by comparator charts following Bullock et al. (1985).
5. Quartz grains comprise nearly 5–6 per cent of the rock fragments. They are shattered in places and the cracks are infilled with iron.
6. Pieces of volcanic glass occur in the pottery in the lower layers. Some appear to be devitrified, probably due to weathering.
7. The occurrence of charcoal in pottery fabric in the lower half of the site accords well with the predominance of charred shells in these horizons. The pottery, however, does not contain any shell.
8. The percentage of porosity does not vary markedly, though the samples from 2.7 m to 4 m appear to be slightly less porous than those from 1.5 m to 2.7 m. This is in keeping with the structure of the clay.

X-Ray Diffraction Analysis

The petrological studies were supplemented by X-ray diffraction analysis in order to confirm the identification of the clay minerals

and to examine the effect of heat on these minerals. Untreated but powdered samples of the potsherds were analysed by a Phillips X-ray diffractometer (XRD), using Cu K alpha radiation. The diffraction characteristics were recorded and the spectra identified according to Robert (1975).

The most commonly occurring minerals identified through XRD are quartz, goethite, muscovite/illite, and hematite. Orthoclase feldspars are present throughout, but in traces. In samples belonging to the basal layers from 4 m to 4.5 m there is a predominance of quartz and dehydrated mica. The XRD spectra of the five samples from the sites north of Chauldari reveal an abundance of quartz, hematite, goethite, calcite, and orthoclase.

Firing Temperatures

The process of firing pots in the Andamans simply involved the placing of burning wood in and around the vessel. The analysis carried out so far renders it possible to determine that the firing temperatures were fairly low.

1. In the first place, it is known that the crystalline structure of kaolin is destroyed at about 600°C (Rye 1981:30, 106). The absence of the kaolinite group of minerals in the potsherds examined so far indicates that firing temperatures could have reached this level.
2. Diffused peaks of illite (micaceous clay minerals) occurring at low values have been identified in all the XRD patterns. The stability of these peaks suggests that the temperatures at which firing took place may not have been less than 500°C.
3. The crystalline form of quartz undergoes a change at 573°C (Rye 1981:34). The fact that the quartz grains in the samples described above are unaltered makes it clear that, on the whole, maximum temperatures could not have exceeded 600°C.
4. As pointed out earlier, traces of orthoclase feldspars occur throughout the sequence. Although two types of feldspars have inversion points of 900°C the effects of this alteration have not been detected in the pottery (Shepard 1957:28).

In view of the above it is possible to generalize that the firing temperatures arising from the baking technique followed by the

potters of the Andamans may have ranged between 500 and 600°C. This is in keeping with temperatures associated elsewhere with open-firing (Rye 1981:25).

Sources of the Clays

The principal sources of the clays used most probably lie in the local blue-grey micaceous sandstones, which are sometimes non-micaceous and calcareous. Conglomerates of white quartz pebbles in a sandy matrix also occur. Chert, opal, and chalcedony, as seen in the thin sections, have probably been derived from these conglomerates.

Soils around the Chauldari midden were examined in order to determine their mineral composition. Samples were collected from the foot of the site, the stream bed about 400 m to the north-west, as also from the Flat Bay area, 300 m away from the site. Twenty grams of soil from each sample were treated with 10 per cent HCL acid, washed with deionized water, and then allowed to dry, after which the soil was studied under a petrological microscope.

In these soils, the predominant minerals are quartz and plagioclase feldspars. Other minerals include zircon, garnet, and tourmaline, together with pale yellow to pale grey magnetitic and ferruginous semi-rounded nodules. In the Flat Bay area, the percentage of peaty material is 10–15 per cent, though it is less than 7 per cent in the other two samples. As mentioned in the section on the sediments from the Chauldari midden, the glass sherds found in the thin sections are likely to be of volcanic origin, considering the proximity of the volcanoes of Narkondam and Barren Islands.

Implications of the Textural Changes Observed in the Pottery

Table IV.9 indicates that the break in occupation does not coincide with the appearance of coarse-grained potsherds, which start occurring at a depth of 2.7 m. Moreover, the abundance of suitable clays in South Andaman eliminates the factors of availability and accessibility as accountable for the difference in question. Nor does there seem to be a fundamental change in the technique of coil building during the period with which we are concerned. In fact, the most significant feature in the mineral composition of the

ceramics appears to be a certain indifference with regard to the selection of clay and its preparation prior to its use.

Obviously the quality of the clay was not essential for the efficacious rendering of traditional incised designs, and clay vessels in general served only a basic utilitarian purpose. However, pots were valued as objects of barter (Man 1883:374), perhaps more so in earlier times, which might partially explain the greater care with which they were made. Although it has been suggested that large specimens of *Turbo marmoratus* and valves of *Tridacna gigas* could have served as containers for boiling food (see Stoliczka 1870:16), there are no recorded observations of such a practice in the Andamans.

Tempting though it is to hypothesize that the Andaman Islanders acquired knowledge of pottery making through trade or barter with the Nicobarese, it is difficult to explain the increasing coarseness of ware, in the course of time, evident at the Chauldari and Beehive Hill middens.

V

Space and Time

Settlement and Resource Exploitation

The Andaman Islanders were formerly divided into thirteen groups referred to in the literature as 'tribes'. These divisions were based on linguistic differences and included the ten groups of the Great Andamanese which occupied North, Middle, and South Andaman, as well as Ritchie's Archipelago; the Onge of Little Andaman; the Jarawa of South Andaman and Rutland Island; and the inhabitants of North Sentinel Island.

'The tribe was of very little importance in regulating the social life, and was merely a loose aggregate of independent local groups' (Radcliffe-Brown 1922:23). However, the northern and southern groups of the Great Andaman chain could be differentiated with respect to material culture, such as forms of bows, baskets, and pots, as also their decoration (Radcliffe-Brown 1922:12). The culturally distinguishable units corresponded to natural boundaries rather than linguistic tribal divisions.

In the past, each of the thirteen tribes consisted of a number of smaller groups (Radcliffe-Brown's 'local group'), each having a limited territory with a poorly defined boundary. A local group was virtually a self-sufficient unit, although the social organization was flexible enough to permit unrestricted interaction at the group level as well as between families. This was possible owing to common territorial rights, the absence of a chief or headman, and due to the practice of adopting children.

It is apparent that, on the one hand, the pattern of social organization encouraged complete freedom of movement within and between sub-groups, but, on the other hand, the very success of this adaptation did not require groups to communicate with those that were not in their immediate neighbourhood. Moreover, food resources, both marine and terrestrial, are abundantly available within a small area, and as in most cases, territorial boundaries encompassed coastal as well as inland areas, the subsistence base was not disrupted. The problem of the scarcity of any material in a particular locale could be resolved through exchange. Thus, even the seasonal availability of food resources did not necessitate long-distance movement. In addition, the Islanders possessed technological skills that enabled the successful exploitation of the forest as well as of the coast. The absence of large predators eliminated any competition for protein resources, thereby facilitating subsistence efficiency. In view of these features, a fairly high degree of sedentism marked inland settlement, particularly in the major islands of the Archipelago.

Population distribution and organization, therefore, formed an isomorphic pattern composed of insular groups that were bound by a common socio-economic structure which appears to have remained largely unaffected by linguistic and cultural differences.

Cross-cutting the divisions of groups based on linguistic differences was an ecological distinction between coast dwellers (*aryoto*) and interior groups (*eremtaga*) (Man 1883:102; Radcliffe-Brown 1922:26). This distinction was primarily based on the coastal groups' use of marine resources, some of which are subject to less seasonal variation than terrestrial resources. Moreover, the semi-permanent village was preferred by the *aryoto* as they were required to move camp more frequently on account of changing fishing and turtling conditions (Radcliffe-Brown 1922:30–2). Another factor that induced greater mobility along the coast was the stench that arose from rubbish heaps that were allowed to accumulate close to habitation areas (Man 1883:105; Radcliffe-Brown 1922:30). The latter generally consisted of separate shelters facing inwards and arranged in a roughly oval pattern. Camps tended to be moved every two or three months, but over short distances of 1–2 km.

As the adaptation of the interior peoples was structured around forest resources, the seasonal round was more marked. The dry

season (November to May) was ideal for long-distance travel by both inland as well as coastal groups for the purpose of social visits and for the collection of fruit and yams (Man 1883:104; Radcliffe-Brown 1922:31). In the event of a death, however, tradition required a site to be abandoned for some time.

Although foraging expeditions entailed greater effort during the rains, they did not preclude the collection of vegetable foods, which were enjoyed in combination with pig fat. Moreover, as these groups generally inhabited more permanent dwellings, such as communal huts (Fig. V.1), they took care to deposit refuse away from their camps in order to be free of offensive odours (Man 1882:281, 284).

The relatively long-term occupation of camps within the forest can be attributed to the availability of ample sustenance throughout the year (Man 1883:102). Furthermore, it may be noted that the Andamans have only a narrow band of littoral resources, which, in combination with the frequency of storms and the unsuitability of the traditional outrigger canoe for voyaging in deep waters, greatly diminishes the role of aquatic food in the local economy (Erickson and Beckerman 1975). This is supported by the finding that coastal resources comprise only 25 per cent of the diet of the Onge of Little Andaman Island (Bose 1964).

The ecological distinction between *aryoto* and *eremtaga* was perhaps more marked in the major islands of the Archipelago, such as North, Middle, and South Andaman Islands, though elsewhere it seemed to be less sharply defined. Nevertheless, coastal archaeological middens are composed predominantly of marine molluscs, and are, therefore, distinguishable from inland mounds wherein mangrove and freshwater species are better represented (Cooper 1987). The sequence of subsistence events broadly corresponded to that of seasonal variation, and this in turn was reflected in the types of encampments and their locations.

Encampments

Five types of shelters are known to have been constructed by the Andaman Islanders in accordance with the duration of stay at a particular camp, the number of people occupying it, and the principal activities that were meant to be carried out there (Man 1883:105–6). Encampments may be distinguished in terms of the duration of

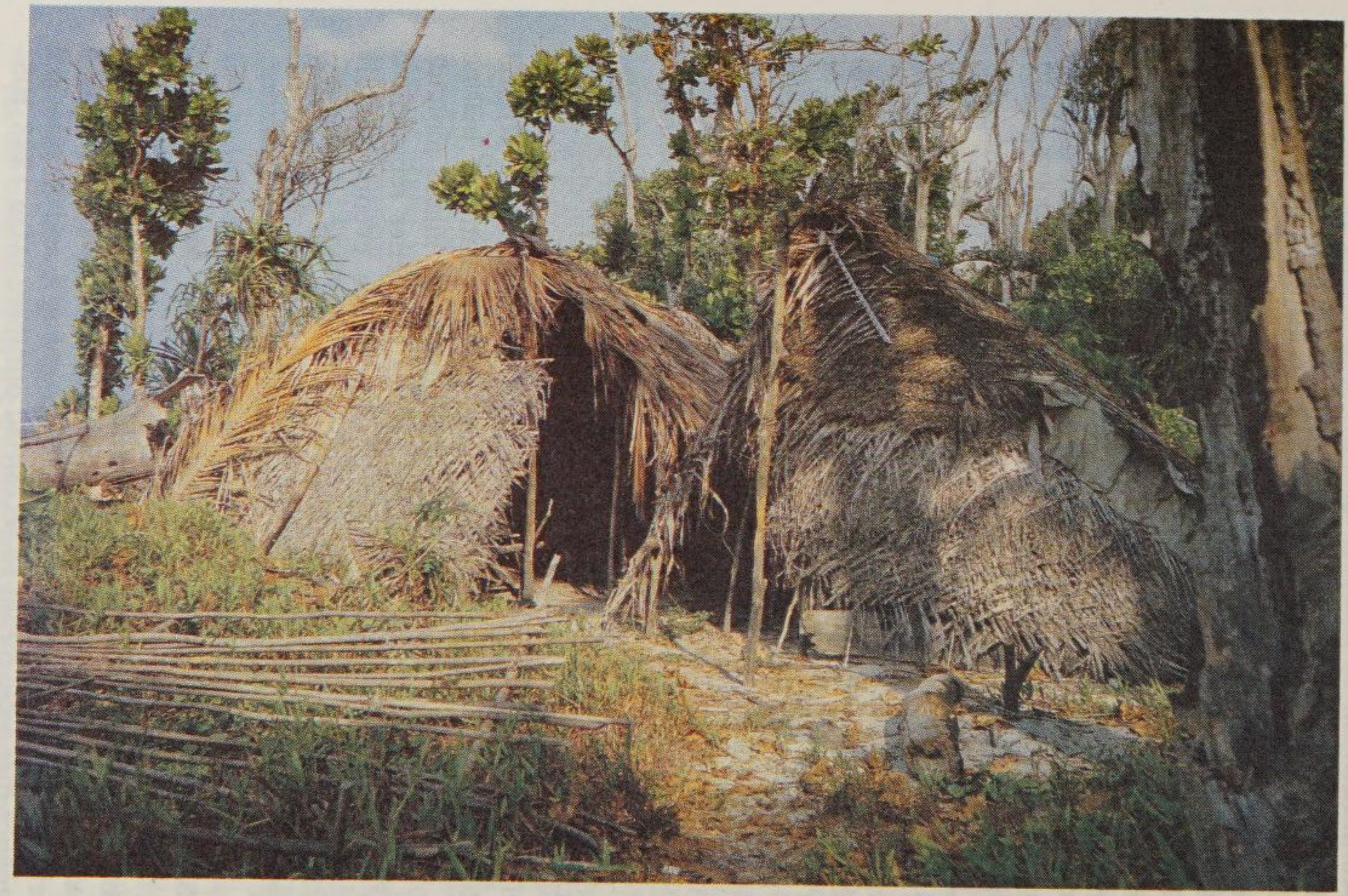

Fig. V.1. Onge communal hut in South Bay, Little Andaman Island

occupation for which they are intended. Thus *baraij* signified long-term occupation, and is also associated with a commnunal hut (Man 1919:74; Radcliffe-Brown 1922:32). *Chang*, on the other hand, denoted a temporary village (Man 1921:146), while an ancient encampment or shell midden was called *bud-l'artam* (Man 1919:78).

The communal hut was more or less permanently occupied and measured 5 to 18 m in diameter. Within the hut was a concentric arrangement of sleeping platforms, each belonging to one family. The central space was generally used for communal cooking. Such huts afforded shelter mostly during the long monsoon months and, until fairly recently, are known to have been erected by the Onge of Little Andaman, the Jarawa, and presumably also by the Sentinalese. Although certain regional differences in the structure of communal huts were noted by Radcliffe-Brown (1922:412–15), some basic similarities did exist, and these are relevant to the data on Onge settlements presented in the next chapter.

The second category of encampment was meant to be inhabited for a shorter duration of time and consisted of several shelters facing inwards, as noted earlier. The temporary nature of these dwellings was particularly advantageous during periods of mourning when custom required a camp site to be vacated for a few months (Man 1883:106).

The third type of camp consisted of a single shelter that was ideal for a brief halt during a hunting expedition or when visiting neighbouring groups.

The Geography of the Andaman Islanders

The analyses carried out so far have yielded useful information on the topographical correlates of shell middens, their dimensions, and the importance of the proximity of sources of water which are so vital for long-term occupation. However, one's perspective of site location is considerably widened in the light of ethnographic records on resource availability and utilization, and with reference to the relevant oral traditions. The latter, in addition to highlighting the role of terrestrial resources in the subsistence system, distinguish the criteria which determine site location, in this case middens, and those by which they are identified.

The oral traditions of the Andaman Islanders pertain to their knowledge of various topographical features. The source of these data is the dictionary of the South Andaman language which was meticulously compiled by Man (1919–23). After sifting through hundreds of words, those pertaining to topographical features have been noted (Cooper 1997a), and these have been schematically arranged in Table V.1.

This indigenous inventory of land forms constitutes the primary body of information from which an economic system is generated. Thus the Andaman Islanders recognize eight major land forms, of which the hill and the jungle consist of five divisions each. The coast, on the other hand, has twelve prominent features, among which the beach and the foreshore have three subdivisions each. Of particular interest to us is the identification of areas in the forest that are marked by fruit-bearing trees. On the coast, sandy and extensive foreshores are regarded favourable for fishing and turtling activities, whereas ideal fishing conditions seem to prevail a little beyond the near shore, especially during spring tides. These examples reflect an extensive knowledge of various ecological niches as well as the diverse subsistence strategies that are employed for their efficient exploitation.

The significance attached to a particular topographical feature, therefore, often depends upon the resources it has to offer and the means of procuring them. This in turn helps the archaeologist to formulate models regarding the nature and function of a site.

It is noteworthy that the Andaman Islanders were acquainted with no less than 164 species of trees and plants (Man 1883:426–33) (also see Sangal 1971; Rao 1983; Bhargava 1981). The depth of knowledge of the local flora is further reflected in the use, by the Onge of Little Andaman, of the sap of the *Orophea katschallica* (Fig. V.2) and of *Zingiber squarrosum* to repel bees while extracting honey (Dutta et al. 1985). More recently, the threat of bio-piracy seems to loom large over the discovery that certain plants known to the Onge contain anti-fever properties which are effective in curing malaria (McGirk 1998).

Place Names

Man and Temple (1880) have provided a list of fifty-eight encampments (community huts or villages meant for relatively

Table V.I. Topographical features mentioned in the dictionary of the South Andaman language

Inland
World (only the Andamans) (*erema*)
Locality (*erema-l'eate*)
Jungle (*erem*)
Dense jungle (*erem-tobo*)
Light (not dense) (*erem-beringa*)
Open (little or no undergrowth) (*erem-walak*)
Heart of the jungle (*erem-chau*; *din*)
Fruit-bearing trees (*tala-maich*)
Hill
Lofty (*boroin*)
Summit of (*ot-lutebo*)
Hillside (*ot-lan*; *ot-gudur*)
Hillock (*tot-jodama*)
Hilly (*pau*)
Valley (*parag*)
Level land (*lingiriya*)
Rock
Large (*boroga-ta*)
Small (*taili*)

Coast (*igora*)
Beach
Sandy beach (*tara-l'oko-pai*)
Rocky beach (*boroga*)
Landing place (*pala*)
Shore (*tot-igora*; *ton-mugu*)
Foreshore (*kewa*)
Little or no foreshore (*parag-boroga*)
Extensive, sandy and sheltered (favourable for turtling and fishing) (*yaula*)
A little beyond the foreshore where fish are shot at spring tides (*talawa*; *toko-kewa*)
Sandbank (*tar-parag*)
Reef (*jowio*; *boroga*)
Sunken reef (*tebi-luro*)
Harbour (*elarula*)
Bay (*kobunga*)
Cape (*toko-choronga*)
Isthmus (*totok-kinab*)

Sea (*juru*)
Boundless ocean (*juru-chau*; *juru-chanag*)
Calm sea (*lia*)
Rough sea (*lia-ba*)
Sea water (*rata*)
Travel by sea
A short trip in a canoe (*akan-gai [ke]*)
A long voyage (*oto-juru-tegi [ke]*)
By sea (*juru-len*)

(Contd.)

Table V.1 (Contd.)

Sunken rock (*totol*)	Strait (*teg-parag*)
Spring (*aka-char*)	Island (*tarchona*)
Spring water (*bea*)	Islet (*totkaicha*)
Freshwater hole (*ina-l'igbang*)	
River (or tidal creek) (*jig*)	
Main river or creek (*jig-chan-chau*)	
Rivulet (*jig-ba*)	

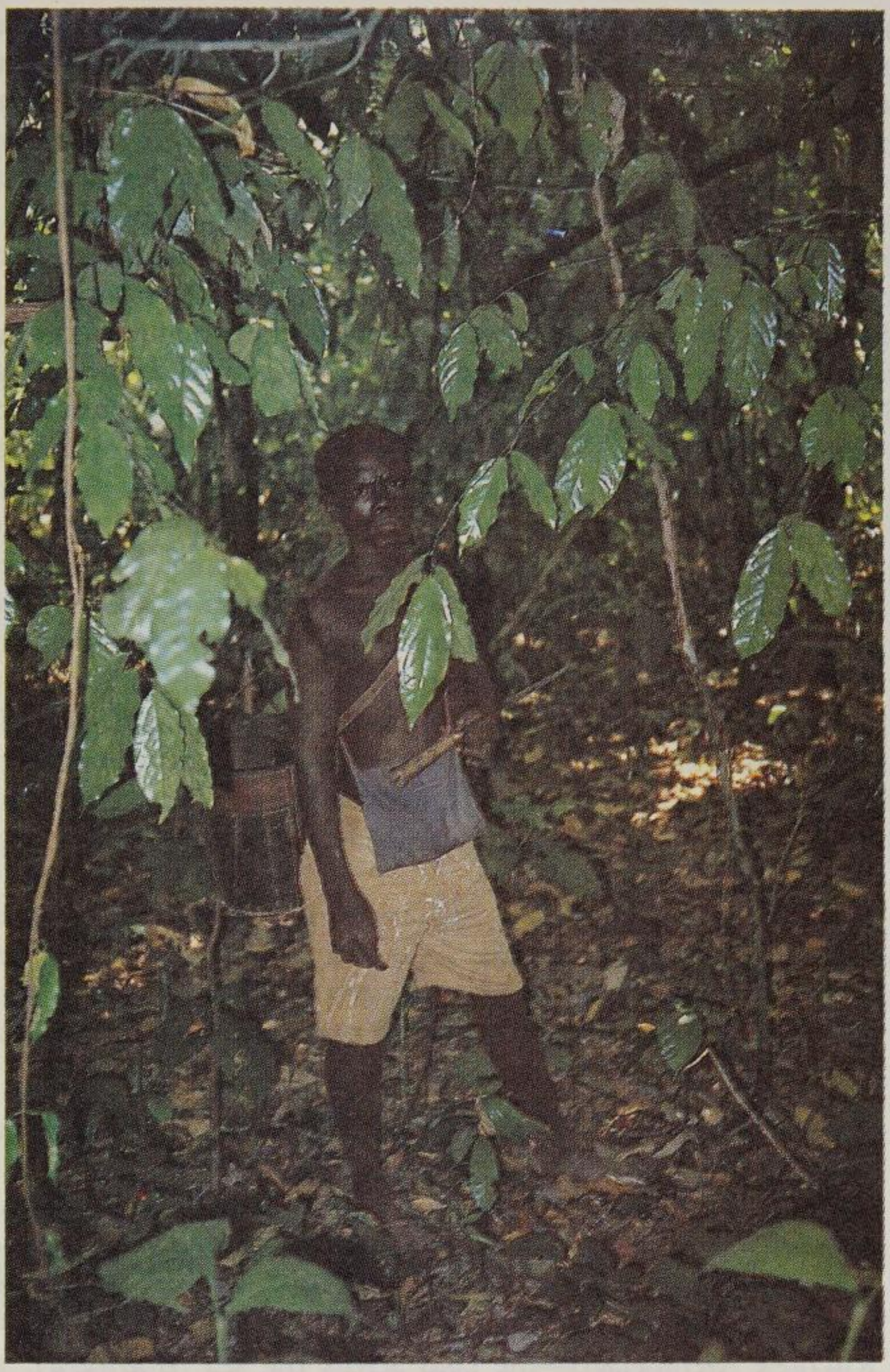

Fig. V.2. Ionge, the head of the South Bay group during the study period, is framed by the branches of an *Orophea katschallicia* tree. Before setting out on a honey collecting expedition, Ionge smeared himself with paste made from the leaves of this tree in order to keep bees away. A wooden bucket, in which honey will be collected, is slung across his shoulders.

long-term occupation) of the Bojigngiji group in South Andaman Island. The names marking the locations of encampments are all descriptive. Moreover, the criteria for identifying camp sites run contrary to the expectation that they would be related to the nature of occupation or to resources of utilitarian value. The list of camps indicates that 39 places are marked by trees/plants, out of which 15 (38.46 per cent) are considered useful. Among the other place names, 7 pertain to the sea-shore, 3 mark freshwater sources, 1 indicates the source of red ochre, another the orientation of an island, and 7 spots are associated with socio-cultural features (Fig. V.3). As mentioned earlier, archaeological middens only mark the locales of camping grounds. The two do not overlap with one another except in cases where a midden serves as a camping platform.

The preponderance of plants in the descriptive terminology of the Andaman Islanders, despite the fact that the encampments concerned were coastal sites, indicates the importance of forest products in the subsistence system of the indigenous population and lends weight to Man's (1882:281) assertion that those living in the heart of the forest were more numerous than those inhabiting coastal areas. In fact, the interiors of the islands were 'filled with encampments' (Man and Temple 1880:256). Moreover, the derivation of place names from local flora reflects the Islanders' exhaustive knowledge of this subject.

In addition to the encampments mentioned earlier, the neighbouring islands, or certain areas within an island, are named after plant species that grow there or according to the prominent geographical features that characterize them. Man (1919:24) has provided the following examples:

1. Coast and interior of Middle Andaman—leaf of the *Licuala peltata* (*kapa-tongda*) which is abundant there.
2. Central portion of the east coast of Middle Andaman—*kol* flower (*el-akakoda*).
3. Baratang Island—named after the *bara* tree; the full name means locality of our type of speech.
4. Ritchie's Archipelago—the land across the sea (*el-arljuru*).
5. The coasts of South Andaman, Rutland Island, Labyrinth Islands, south-west corner of Middle Andaman: the land of spring water (*el-aka-beada*).
6. Little Andaman Island—the *Semecarpus* (*patang*) tree which flourishes there, and the casuarina trees (*wilmatara*) on the sand.

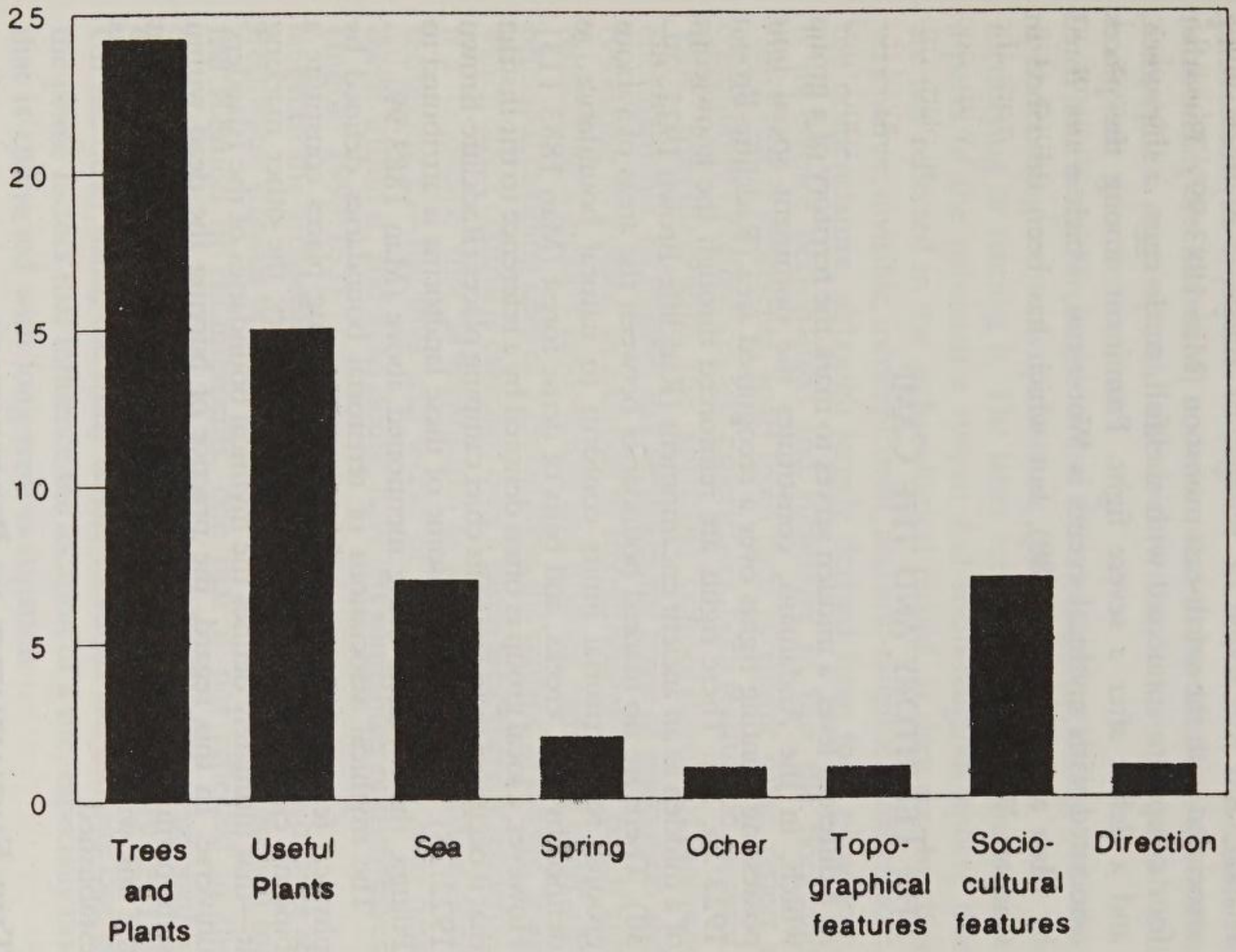

Fig. V.3. Attributes of encampment place names from the Andaman Islands

Seven of the 58 encampments referred to earlier are associated with socio-cultural features. Three of these are related to spiritual or superstitious beliefs or objects, such as a burial platform, the turtle nets of the departed spirits (north-western coast of Rutland Island), and the abode of Puluga, or Biliku, a mythical being associated with the north-east monsoon (Man 1883:99). The other four camps are connected with shellfish, turtle eggs, a shipwreck, and a defeat after a severe fight. Prominent among the places associated with mythical events is Wot-a-emi, which is not listed by Man and Temple (1880), but which has been described in Chapter VII.

The Territory and the Camp

At a different level, a midden serves to mark the territory of a group which, in the Andamans, constitutes the dominant social unit possessing hunting rights over a recognized area (Radcliffe-Brown 1922:26, 29). These rights are reinforced through the knowledge of a midden as an ancient encampment (Radcliffe-Brown 1922: 29–30). There are no marked boundaries between the areas of various groups, for territorial limits conform to natural boundaries, as defined by hills, creeks, and belts of dense forest (Man 1883:113). However, a local group is often denoted by a reference to the district that it occupied or to one of its chief camping places (Radcliffe-Brown 1922:28). The creation of some of these landforms is attributed to Puluga, the mythical being mentioned above (Man 1883:99).

The mythical associations of territorial boundaries defined by physical features and those of certain camping places constitute a binding element—one demarcating a territory, the other marking it—that ultimately defines the mythical boundaries of the Islanders' universe. In this regard, the practice of burying the dead within semi-permanent encampments assumes special significance, in that the link with the ancestors and, in turn, with the mythical realm is established.

The Encampment in Perspective

The data outlined so far are divided into two principal categories, the first of these comprising local knowledge of the geography of

the Andamans. This constitutes a data bank that is uniformly available throughout the Archipelago, and on which the pattern of subsistence is based. The second category concerns the semi-permanent encampment, the ecological factors determining its location, the temporal dimension of settlements, the names by which they are identified, and the relationship between the major camp(s) of a group and the area within which its social and economic roles are enacted.

What emerges from this is that the criteria for selecting a suitable spot for long-term occupation are quite different from those for identifying or naming it. The latter set of criteria illuminate those aspects of the subsistence system and socio-religious sphere that are not reflected in the archaeological record, as they are, by their very nature, invisible, inconspicuous, and non-tangible. Furthermore, the nomenclature, although largely derived from local plant lore, is in essence personalized and subjective in that the flora and fauna that it represents, apart from their economic value, reflect a community's preferences and experiences, both fearful and pleasant. This, together with the spiritual connotations of ancient encampments, establishes and enhances the sense of association and belonging to a place, in addition to strengthening social bonds and reinforcing a group's landowning and hunting rights. In effect, the principal camping sites of a group form the centres, as it were, from which direct control is exercised over a given area, thereby rendering it a 'landscape' that 'is constituted as an enduring record of—and testimony to—the lives and works of past generations who have dwelt within it, and in so doing, have left something of themselves' (Ingold 1993:152).

From the archaeological point of view, the proximity of sites to freshwater streams or pools constitutes a fundamental criterion for the location of encampments, one that is not reflected in the etymology of place names, but which is nevertheless mentioned in ethnographic reports (Man 1882:283; Radcliffe-Brown 1922:412). On the other hand, the study of site locations can indicate one of the prime factors that influence the location of a site, especially one that is connected with long-term occupation.

What is also apparent is the feedback relationship between environmental features and modes of subsistence, on the one hand, and vital resources and the location of encampments, on the other. In fact, all these elements seem interdependent, although the situation

is rendered more complex with the use of socio-cultural phenomena in distinguishing camp locations.

Perceptions of Time

Our concepts of time and space are fundamental to the study of the past and have been freely borrowed from the disciplines of geology (for example, see Gould [1988] on the discovery of geological time) and ecology, as is the perspective they provide on issues concerning human origins and culture change. This perspective, which informs current approaches in reconstructing the past, is nevertheless representative of present-day modern societies, and not of the communities whose roots we seek to elucidate.

Fortunately, the anthropological literature on the Andaman Islanders provides a fairly good idea of the way in which they perceived themselves in relation to the passage of time and the environment in which they lived.

Some years ago, Clark (1992) outlined the ways in which various preliterate societies schedule their economic and social activities. He cited the example of the Andaman Islanders to illustrate his view that preliterate people, having no idea of abstract time, 'divided it according to local circumstances' (Clark 1992:44). However, to conclude that a hunter-gatherer's life was primarily ordered by the requirements of expediency appears rather simplistic, for it overlooks the possibility that in a situation where time is not measured in specific units, as in calendars and clocks, the spatial and temporal dimensions may assume a different significance. This is best illustrated in the case of the Andaman Islanders, who view the past and present in terms of origins and phases of life (Table V.2). The former is perpetuated through myth, while the latter is structured by ritualistic taboos.

This schematic arrangement follows, to some extent, the pattern of Andamanese cosmology drawn up by Leach (1971:33), but it differs from that of Leach in its sole concern with the categories of time, and in incorporating the dimension of spiritual existence through the preservation of the bones of the dead (Man 1883:145–6; Radcliffe-Brown 1922:113, 184).

Leach (1971:33) has argued that the transformation of the ancestors into animals leads to the creation of 'the categories of nature and natural time'; while the various aspects of nature are

brought into relation with man 'through the transformation of real life (actions of culture)'. Central to this theme is *kimil* which signifies a transitory phase in nature as well as in man.

Table V.2. The anthropological organization of the categories of time as conceived by the Andaman Islanders

Myth time		
Origins	*Flood*	*Drought*
First man and woman, useful arts	Humans transformed into animals	
Natural time		
Times of day, tides		*Seasons*
	Wet	Dry
Phases of life		
Puberty: a. flower names		
b. *kimil*—stage of transformation		
Life after death		
Spirit (bones—magical value)		

What does an archaeologist learn from all this? A different perspective? But surely this can be obtained in a more comprehensive form from other sources, such as Clark's (1992) work which presents a prehistorian's view of space, time, and man. In the chapter on time, Clark (1992:39–59) summarizes the ways in which preliterate societies perceive time. These include Evans-Pritchard's (1940) observations on 'structural time' with reference to the Nuer, a Nilotic people of the southern Sudan, and Thomson's (1939) account of the seasonal factor influencing the life of the Wik Monkan tribe of Cape York Peninsula in northern Australia.

Some of Clark's (1992:41, 47) generalizations pertaining to the value of myths in validating social structure, and to the cyclical nature of ecological time, to which the annual economic and social activities are geared, seem to echo the sentiments of most prehistorians in this regard.

The Temporal and Spatial Dimensions of the Archaeological Record

While acknowledging that there are other perceptions of time, the fact remains that inferences regarding the manner in which time was

conceived in the past have been drawn from the study of contemporary societies. This exercise amounts to nothing more than speculation, for there is no way of checking conjectures on abstract subjects against archaeological data. Although some idea of ancient concepts of time and space can be gained from burial practices, megalithic remains, and similar archaeological material, most archaeological models of the socio-economic aspects of culture are based on field observations and descriptions of contemporary societies.

Moreover, our data base indicates how we perceive and organize the knowledge of the Other (in this case the Andaman Islanders). (For a critique of anthropology's temporal discourse, see Fabian [1983]). Thus the categories of time in the Andamans and their interpretation reflect the methodological and theoretical framework of anthropology; needless to add that our schematic arrangement of these categories stems from an epistemological base that is intrinsically different from that of the Andaman Islanders. This also extends to the medium of communication which, in the Andamans and in similar situations, is confined to the oral transmission of traditions through ritual and practical demonstration, in the course of daily life. Hence, two modes of knowledge underlie the perceptions of time discussed here.

As indicated at the outset, the methodological and conceptual framework of archaeology reflects the concepts of time and space of the modern Western world. But few have paused to consider that the archaeological record, to which these concepts are applied, may, to the people to which it is attributed, encapsulate the spatial and temporal dimensions of their lives. This is so in the case of the Andaman Islanders as they see themselves in relationship to the traces of their own past. Perhaps the best way of illustrating this point is by juxtaposing the focal points of archaeological inquiry, such as sites, origins, stratigraphy and skeletal remains, and their bearing on time and space, with the perceptions of the Andaman Islanders on the same issues (Table V.3).

In the schematic presentation in Table V.3, the first column outlines the standard approach in studying the traces of the past, and would, therefore, be universally applicable to the study of archaeological material. The Islanders, on the other hand, perceive a shell midden as an ancient encampment which marks the territory of a group (Radcliffe-Brown 1922:29), and also serves as a potential camping platform, as mentioned in Chapter II. A midden, therefore, conveys

a sense of belonging to the members of a group who exercise hunting rights over a recognized area (Radcliffe-Brown 1922:26).

Local myths have been given credence by being associated with certain localities such as Wot-a-emi, which was regarded as the ancestral dwelling place of the Andaman Islanders (see Cooper 1993a, and Chapter VI.I). The contemporaneity of this site with others in the vicinity reduces its archaeological significance, though its association with a mythical event apparently served to perpetuate local traditions.

Table V.3. Concepts of time and space

Archaeology	Andaman Islanders
Shell midden	
Archaeological site—potential for yielding information on history of cultural traditions, diet, demography, etc.	Ancient encampment (*bud l'artam*) Marks the territory of a group Potential camping platform
Wot-a-emi (origins)	
Oldest site? (radiocarbon date) Place which was first occupied/colonized?	Ancestral dwelling place Place where the survivors of the flood found themselves
Past and present	
Stratigraphical succession (transmission of traditions)	The period before British colonization of the Andamans in 1858 is referred to as *bibipoiye* (the days when there were no dogs). Dogs made hunting easier, but reduced pride in hunting success
Skeletal remains	
Ancient customs Data on palaeopathology and diet Museum exhibits	Bones harbour spirits of the dead

In the absence of standardized units of time, the past and the present can be distinguished by the significance attached to events that have brought about dramatic changes in traditional life ways, thereby influencing the very attitudes and ideas of the people concerned. This is perhaps best illustrated by the impact of the British penal settlement, in Port Blair, on the local population. From an historical

point of view, this event constitutes a relatively minor stage in colonial expansion. But its repercussions spelled disaster for the Andaman Islanders and, no doubt, left a deep impression on their psyche. The period before colonization, however, was not associated with the invaders. Instead, in the last century, it was referred to by the people of North Andaman Island as *bibipoiye*, which literally means the days when there were no dogs, these animals having been introduced by the British (Radcliffe-Brown 1922:36). The term itself conveys the importance in which dogs were (and are) held for hunting purposes. The consequent economic gains notwithstanding, the pride with which middens were once regarded diminished considerably, for the dimensions of these mounds no longer reflected the skill and success in hunting with which they were once associated (Man 1885:269). This instance not only illustrates the creation of a kind of historical perspective, but gives new meaning to something as mundane as a heap of faunal remains.

Furthermore, the practice of burying the dead within communal huts on Little Andaman, and the occurrence of human skeletal remains in middens on various other islands, ensures that the dead continue to remain a part of the group, regardless of whether some of the bones are carried about by relatives or friends (Cipriani 1966:76). In this respect, a midden is a repository of the remains of ancestors, thereby constituting a direct link with the past.

However, this somewhat muted reverential attitude towards an ancient site is entirely missing during the formative stages of a midden. For initially such a deposit constitutes a mere rubbish dump whose stench necessitates the relocation of encampments. It is only when a mound reaches a suitable height that it is used as a camping platform. Apart from the logistical advantage gained thereby, the older the site the more respect it earns in terms of symbolizing the achievements of the past, of providing tangible proof of a beginning as well as a sense of continuity. For the Andaman Islanders, therefore, a midden embodies the temporal and, to some extent, the spatial dimensions of their world.

Conclusion

When viewed in this context, a midden is a measure of the Islanders' progress in time and space, time measured in a lifetime and over

generations. It is a dynamic expression of a moment, period, or season (*ig-yutarba* (*da*)), with duration defined in relative terms such as long or short time, in exclamations concerning the fleeting nature of moments, or as marking the progress or rhythm of an activity such as dancing (Man 1921:138).

In reviewing the archaeological approaches to the study of ancient remains with reference to the inherent dynamism of their spatial and temporal constituents, the process and object of archaeological inquiry become one, rendering it possible to transcend the epistemological boundaries of the West and stand, albeit shakily, within those of the Other.

VI

The Formation of the Archaeological Record

A prerequisite in the interpretation of the archaeological record is an understanding of the dynamics involved in its formation. The Andaman middens may be regarded as secondary deposits which are normally associated with areas that are used intensively, and which require organized disposal strategies. As indicated earlier, shell middens served a dual purpose: first, as refuse dumps, and second, as camping areas. The latter function seemed most appropriate where a dry, elevated spot was required for a stay of any duration. We are therefore dealing with the process of discard which in turn is affected by periodic changes in the composition of archaeological deposits, most likely through the incorporation of 'new' objects or different styles. This does not preclude alterations in the modes of settlement and subsistence that are caused by variable environmental conditions.

This chapter focuses on a study of occupied and abandoned Onge encampments on Little Andaman Island (Cooper 1994). Thereafter, the issue of gender is examined in relation to the role of women among the Andaman Islanders. The discussion then explores the applicability of the forager/collector model, as postulated by L.R. Binford (1980), in defining the subsistence system of the Andaman Islanders.

An Ethnohistorical Perspective

As the following account will demonstrate, the present-day economy of the Onge has been virtually inundated with cultural items that

were, till recently, quite alien to their way of life. It must not be assumed, however, that the effects of colonization manifested themselves simultaneously throughout the Andaman Archipelago; on the contrary, the islands have been subjected to various influences in the course of time. As this subject has been discussed at length in Chapter I.I, only a few examples illustrating the circumstances under which certain items were incorporated into the indigenous economy will be provided here.

While iron implements, glass bottles, beads, and other objects were freely distributed by the British among the Great Andamanese in an attempt to establish friendly contacts with the latter, metal was still a precious commodity among the Onge. It was only fifty years ago that knives and fish hooks were introduced to the people of Little Andaman (Cipriani 1953:62). Earlier, however, opium and alcohol were given as presents by Japanese and Chinese smugglers who came to Little Andaman to collect valuable shells, using the Onge as divers (Cipriani 1954:69).

The pieces of iron and flaked glass that occur in the upper layers of middens undoubtedly rendered the local economy more efficacious, although the colonizers thought little of the disastrous effects of alcohol and opium which were also distributed.

The introduction of dogs in the last century made hunting considerably easier. In an Onge encampment it is common to see mongrels making off with scraps of food, including bones, which would otherwise have been swept aside as midden debris. In this regard, one cannot overlook the displacement of objects due to scuffing and trampling, as indicated by some of the irregularly broken pig bones from the Chauldari midden in South Andaman Island.

Whereas earlier a move to another camp was either determined by the death of a group member or by subsistence activities, these days the proliferation of fleas associated with dogs compels frequent shifts. Personal experience has shown that anyone who inadvertently ventures into a recently abandoned encampment would be covered by countless fleas within minutes. To be completely rid of them, however, could take days!

The Onge Encampments at South Bay

In 1977, the 700 sq. km island of Little Andaman was opened up to settlers, and for the plantation of oil-palm trees and other species

of commercial value by the Forest Development Corporation. The hundred-odd Onge surviving today have been divided into two groups and made to settle at Dugong Creek and South Bay. Most of them reside at the former settlement where they can avail of a medical dispensary and the services of social welfare workers. The Onge, however, have resisted all attempts to encourage them to take up cultivation. They are, at present, restricted to an area of 110 sq. km which is shared by a Nicobarese settlement and a lighthouse.

Until fairly recently, shell middens on Little Andaman were undergoing formation (Cipriani 1954:69), and are probably still being built up by the Jarawa and the North Sentinalese. As the last two groups have the reputation of being hostile, and as the population of the Great Andamanese has dwindled to thirty individuals, it was decided that the most practical alternative would be to survey several Onge encampments representing various stages of abandonment, and to record the observable items that they contain. The functional attributes of these sites are examined herein in terms of their possible reoccupation. It is hoped that these observations, together with a consideration of the variable patterns of discard and the conditions of preservation, might explain the presence of the cultural items most commonly found in shell middens, though processes determining the internal structure of such mounds would be difficult to delineate.

The Onge encampments described here represent the intial stage in the process of discard wherein it is possible to distinguish between those items that are dispensable and those that are not. This field study was carried out during February and March 1986.

The study area was South Bay, a coastal stretch that was used by a small group of Onge comprising twenty-two individuals. Although this group was, to a large extent, dependent upon food rations supplied by the Indian government, the members continued to supplement their diet by fishing, hunting pigs and turtles, and gathering wild, edible plants. In addition, they resided in traditional shelters, having rejected the houses built for them by the government. It was thus possible to map three types of sites, including a recently abandoned base camp, a fishing/hunting camp which had not been used for a considerable length of time, and a temporary encampment that may have been occupied only for a day or two (Fig. VI.1).

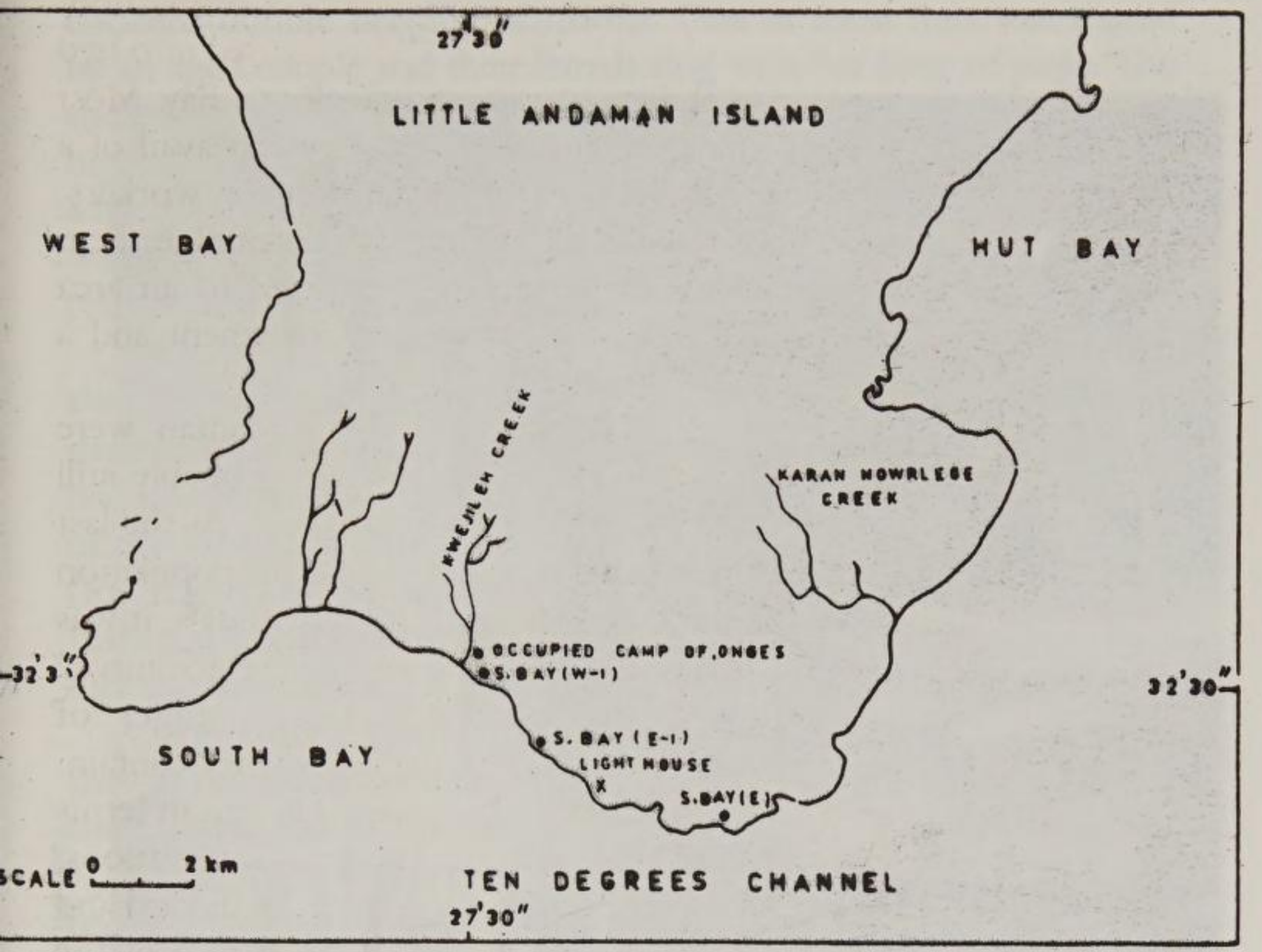

Fig. VI.1. Locations of abandoned Onge encampments at South Bay

The South Bay–Occupied Camp

In the course of monitoring the numerous activities that took place every day at this locale (South Bay, Fig. VI.2), measurements and photographs of the various structures were taken.

At the time of my visit, this camp was relatively new and was situated about 100 m to the north of the communal hut, and 3.5 km west of the newly constructed lighthouse.

Arrangement of Camp

The camp was about 30 m long and was oriented in an east–west direction. It was open at the eastern end, while a large sleeping platform occupied by the bachelors was situated at the western end. The shelters faced inwards and formed a rough oval comprising 10 sleeping platforms and 2 storage platforms. Two of the shelters

Fig. VI.2. Southern part of occupied Onge camp, South Bay

enclosed double sleeping platforms. One of these huts was shared by an aged couple and their female dog with her litter of pups. The shelter on the opposite side also had two platforms, of which the higher and larger one was shared by a middle-aged couple. Lying adjacent to their platform was a smaller one, just 15 cm high, which was occupied by an emaciated old lady who was obviously a close relative of the couple with whom she was living.

There were two women with newborn infants who did not have sleeping platforms, but who rested on beds of large leaves that were gathered and arranged by their respective husbands. An improvised bed on the ground is usually made during childbirth which, in view of the present decline in the Onge population, is a rare occurrence (for references on practices concerning childbirth see, Radcliffe-Brown 1922:89; Roy and Ganguly 1961). In addition to the 2 infants, there were 12 men and 8 women in the camp.

A large storage platform stood between the bachelors' shelter and that of the elderly couple, while a smaller one had been built near the eastern end of the camp.

At the foot of every shelter lay a small patch of ash which represented the cooking fire. However, there were two communal hearths which were much larger than those belonging to individual families. One of the communal hearths was located at the western end of the camp, while the other was in the eastern portion.

To the north of the camp was a clothesline weighed down with clothes that would only be worn during visits to Hut Bay, the island headquarters. Otherwise, the men wore shorts and the women put on skirts over their aprons of shredded cane.

The debris resulting from various activities formed a rough semicircle around the camp and consisted mostly of leaf-litter, branches, and pieces of old thatch.

It was interesting to note that the Onge had rejected the row of ugly wooden houses with tin roofs that had been built by the Public Works Department (PWD). One of these shacks was used by the Onge for storing flour and rice, which are supplied by the administration. The rations, which include oil and sugar, are transported to the camp once a month by tractor.

A small well had been dug in the clearing next to the shacks so that drinking water was available all through the year. However, fresh water for the newly occupied camp was supplied by two small

holes that were dug by the Onge, about 20 m north-east of their shelters. One of these pits was 60 cm wide and about half a metre deep, and was covered by a wooden plank. The women filled their jerry cans and plastic mugs with water and carried them back to camp.

Principal Activities of Men and Women

During my visit, the men were mainly engaged in hunting wild pigs with the help of their dogs. A few of them usually stayed back in camp to make thatch out of *Pandanus* leaves. In addition, platforms on which meat was smoked were constructed (henceforth referred to as smoking platforms [SMP]), arrows were repaired, and honey-collecting expeditions undertaken. On two occasions, a few men were observed transporting fuelwood back to camp. The *dhou*, or large knife, was generally sharpened on a whetstone in the camp itself.

The first step in the process of butchering a pig at a communal hearth involved the removal of the entrails and the stuffing of the abdomen with *chichindagans* leaves. After the lower portions of the legs were cut off, the carcass was placed on large burning logs and the singed hair was scraped off with a *dhou*. The flesh was cut into pieces and boiled in its own fat, to which some water was subsequently added. The cooked portions were kept on a smoking platform and these were casually picked up as and when people felt hungry. The platform was conveniently built over the hearth where some of the food was boiled so that the smoke from the cooking fire could reach the meat that was placed on top of the platform.

The women were responsible for preparing the meals, which included *parathas* (leavened bread), rice, and wild tubers. They also fetched water, wove baskets and mats, and made their traditional aprons out of shredded cane. The two young mothers remained busy with their nursing chores, when not otherwise occupied (Fig. VI.3).

The vegetation behind the camp had been burned in order to create a new clearing where this group of Onge intended to build another camp after some time. Unfortunately, the concept of hygiene seemed to be lacking, as the mangy dogs happily shared the shelters with their masters, who calmly removed fleas from their own bodies and those of their pets, and did not bother to get rid of the maggots that fell to the ground from pieces of rotting pork.

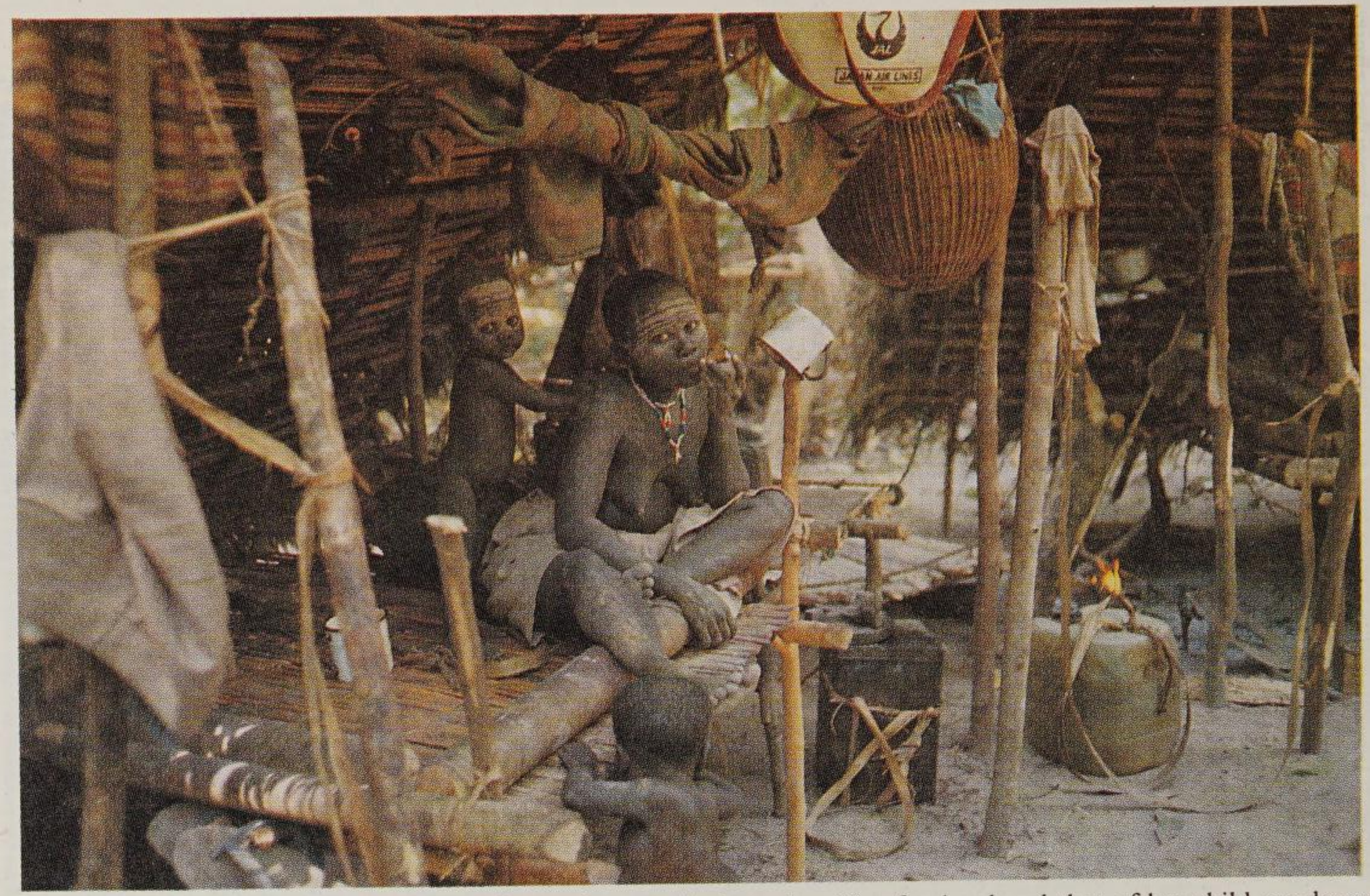

Fig. VI.3. An Onge woman contentedly smokes a crab-claw pipe. Her forehead and that of her child are decorated with clay. The various types of clay are prized for their medicinal and cosmetic value.

Modern and Traditional Items

Table VI.1 illustrates the extent to which traditional items have been replaced by articles associated with the 'modern' world. By 'traditional' is meant the components of Onge material culture that were recorded after the setting up of the penal colony. Articles such as transistors, suitcases, and watches were in all likelihood given by the local welfare agencies.

Table VI.1. Variety of objects present in the Onge camp

Modern	Traditional
Metal trays	Wooden platforms and thatch
Candles	Bows
Transistors	Arrows
Watches (not working but worn when visiting Hut Bay)	Baskets
	Resin torches
Clothes	Clay and ochre
Tobacco	Crab-claw pipe
Dhou	Adze
Axe	Wooden buckets for collecting honey
Tins	Aprons of shredded cane
Metal plates and spoons	Mats
Umbrellas	Bamboo tongs
Shoes (never used)	
Cloth bags	
Plastic cases and jerry cans	
Small wooden catapults	

Discussion

This was a temporary encampment as witnessed by the type of shelters and by the ring of debris around it. Refuse from the hearths was occasionally swept aside, though scraps would be thrown to the ever-hungry dogs.

Maintenance activities at that time of the year mostly involved working with various plant fibres. Mats and thatch were manufactured near the periphery of the camp, while aprons of shredded cane and baskets were made either on the ground or in the shelters.

Most of the modern artefacts were made of metal and plastic and were essential for everyday use, except, of course, the watches, shoes, most of the clothes, and the ubiquitous transistors. The last four items, though of little utilitarian value, were prized as prestige symbols through which the owners hoped to be recognized as members of the wider socio-economic milieu of Indian society. None of these possessions would therefore be discarded, unless they were worn out or damaged beyond repair. Nine out of the twelve traditional items listed above were derived from plant material, though the arrowheads and adze blades were of iron. Aprons, mats, and baskets would have to be replaced from time to time and, being dispensable, would be discarded when old. The smoking platforms were expediently built structures that would also contribute to the debris. If, however, the other platforms, including the thatch, were in good order, they would be dismantled and transported to the new residential locale.

South Bay (W-1)

South Bay (W-1) (Fig. VI.4) was a crude version of the communal hut, and had a rectangular outline instead of the traditional circular one.[1] The hut had been divided into two sections, the northern one

[1]Percy Vaux (1902:4–5), officer in charge of the Andmanese homes in the British penal settlement, wrote an account of his reconnaissance of Jarawa territory. Vaux was subsequently killed by an arrow during a punitive raid on a Jarawa camp. The following extracts from Vaux's report describe two Jarawa camps around Port Campbell and Port Anson, on the west coast of South Andaman Island:

> . . . .Northern shore of Port Campbell opposite the southern extremity of Clyde Island . . . .Jarawa camp. It was a five hut camp. . . .three large huts in the middle and one at each side, at a little distance; these latter, our Janglis explained were for lookouts, where only men slept. The Andamanese said it had not been occupied since the rains. It was substantially built,. . .and was well thatched. A string of pig skulls was hanging from the roof, besides this an old basket and an arrow was all we could find. The Andamanese told me the Jarawas would use it again next rains. The huts were on slightly rising ground alongside a fresh water stream.
>
> Port Anson–southern end of the harbour called by the Andamanese Dum-la-chorag–big Jarawa camp. The Andamanese call the place Pochang, and it was. . . .5 miles from the mouth of Dum-la-chorag-jig Creek. We advanced to the hut and found it empty . . . . It was roughly oval in shape, the length being 60 feet and the breadth 40 feet

being 12 m long and 3.6 m wide, while the southern portion was 14 m long and 4.6 m wide. The entire hut stood 2 m above the high-water mark, and had a thatched roof supported by a row of wooden poles. Towards the south, the roof sloped all the way to the ground and faced the sea, thus serving as an effective wind-break. There were three openings, one of which led into the southern section and was 60 cm wide, though one had to bend down in order to enter it. The second entrance was a gap in the western part of the structure and connected both the sections. The northern half of the hut was open on the western side, probably because part of the thatch had collapsed. Thirteen wooden posts supported the roof in the centre and were spaced out at unequal intervals of about 1 m. These posts were 2 m high, with diameters ranging from 4 cm to 8 cm. The poles upholding the walls were 1.4 m high and about 4 cm thick.

This hut, which formed the base camp of the South Bay Onge, had been abandoned for about two months at the time this study was being conducted. I was given to understand that the reason for leaving it was to build temporary shelters away from the beach,

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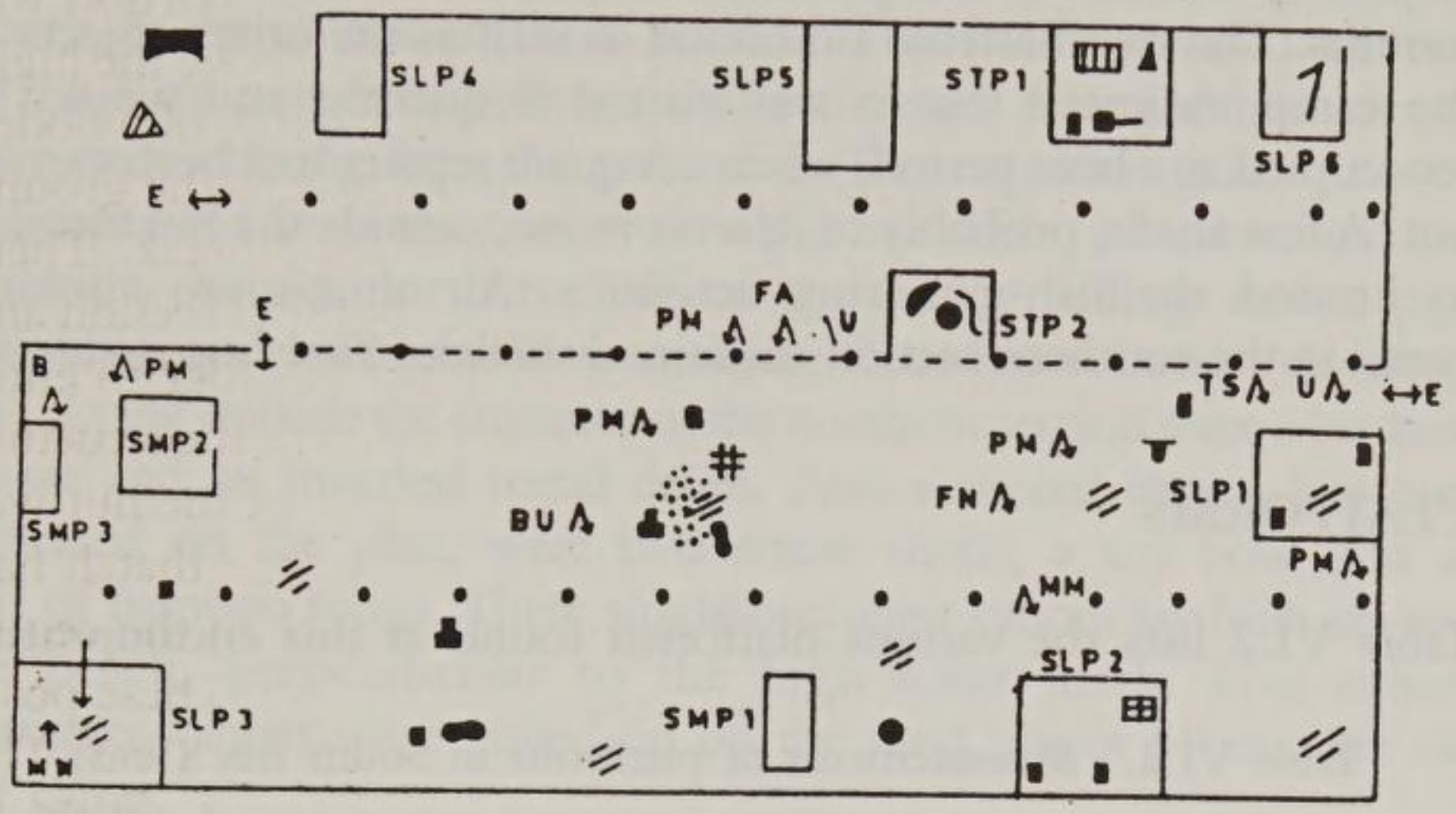
while it was 54 yards in circumference. Seven stout posts in a rough circle in the centre of the house were the main supports of the roof. They were about 17 feet in height, and some were 8″ in diameter,. . .Rafters stretched from these to bullies on the outer circle, where the roof sloped to about 3 feet from the ground. . . . .it had no floor . . .and was large enough to contain from 80 to 100 people. From the top of the roof, between the 7 centre posts were suspended, on strips of cane, 9 or 10 feet long, over 250 pig skulls, neatly fastened up in basket work. Below the skulls was the big fire place, around the sides of the huts were the smaller fire places evidently used by separate families. There were about half a dozen of these, but when the house is in full occupation there would be at least a dozen. Each fire place consists of four stakes driven into the ground. . . .and some 3 feet from the ground a piece of neat matting like a chick is fastened to the stakes so as to form a shelf for the meat, etc. A dozen well-made vessels which the Andamanese said were honey pots were suspended from the rafters, as well as baskets of all sizes, unstrung bows, leaf water vessels. . . . Several children's bows were found, also wooden balls for them to play with, and a rough circular piece of wood which the Andamanese said was rolled along, and into which they shot their arrows. There was a large 'degchi' (vessel) made out of a tree trunk fitted into one of the honey pots, and neatly worked mats used as shelves for the food, and also. . . .to sit on. Among other things I discovered a glass bottle, and it is worthy of note that they had a stock of firewood chopped and tied up with cane ready for use in one corner of the building. . . .there were seven paths leading up to it (house). Over two of the entrances were raised platforms of logs sloping from the ground to about 3 feet in height. These were the look-outs and each commanded a path and my own impression is that when the camp is in habitation, over each path a similar platform is erected, and each path thus well commanded.



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S L P	=	Sleeping Platform
S M P	=	Platform on which meat is smoked
S T P	=	Storage Platform
B	=	Basket with 3 turtle skulls
F A	=	Fishing Arrow
F N	=	Fishing Net
M M	=	Metal Mug
M N	=	Mosquito Net
B U	=	Bucket
P M	=	Pig Mandible
T S	=	Turtle Skulls
U	=	Umbrella
E ↔		Entrance
		Indicates that the object is suspended over the platform
→		Indicates that the object is below the platform
		Hearth
		Firewood
		Tin
		Metal Plate
		Plastic Can
		Metal vessel containing *Turbo* Shells
#		Metal Rods on which cooking vessels are kept
		Slipper
		Bottle
		Broken basket
		Inverted drum
		Suitcase
		Metal cylinder
		Oar
		Bow
		Nylon rope
7		Adze handle
		Thatch partition
		Posts supporting the roof

Fig. VI.4. South Bay (W-1)

where the forest would provide adequate shade in the summer months. The two battered umbrellas as well as the other objects in the camp indicated that it was visited frequently, and would be reoccupied at a later period, when adequate repairs had been carried out. A few shells, probably of *Marcia recens*, outside the hut attested to limited shellfish-gathering activities. An aluminium cooking vessel in the southern section contained shells of *Turbo argyrostomus*.

Platforms

Table VI.2 lists the various platforms found at this encampment.

Table VI.2. Measurements of platforms in South Bay (W-1)

Platforms	L (m)	W (m)	H (m)	Objects placed on the platforms or suspended over them
SLP-1	1.3	1.1	0.5	Two pieces of cane, one tin and one metal mug
SLP-2	1.5	1.2	1.0	One plastic jerrry can and two tins
SLP-3	1.5	1.2	1.0	Mosquito net over it and pieces of wood below it
SLP-4	1.3	0.7	0.55	One log headrest (1.5 m long and 10 cm thick)
SLP-5	1.6	0.9	1.0	
SLP-6	1.2	0.8	0.5	Adze handle
SMP-1	0.9	0.9	1.0	Four pig mandibles suspended over it
SMP-3	1.0	0.4	1.0	Basket with three turtle skulls suspended over it
STP-1	1.3	1.2	1.5	One large tin, one metal box, gas cylinder (?), and one oar
STP-2	1.0	0.9	1.5	Bow, nylon ropes, metal dish

There were three sleeping platforms (SLP) in each section of the hut, the ones in the southern part being larger than the others. As various objects were found on top of these structures, they may have temporarily served as storage platforms (STP) like the two in the northern section.

The three platforms (SMP) over which meat was smoked were located in the southern section. This part of the hut was not only

the larger of the two compartments, but also contained the principal hearth, in the central northern portion. This hearth covered an area of 1 x 1 m, over which four metal rods were arranged in a cross, their ends curving into the ground to form a crude grill.

Suspended from the roof were a pig mandible, a bucket, and an umbrella. In the northern half of the hut a fishing arrow, pig mandible, and an umbrella were hung from the common dividing wall. Lying outside the entrance of the northern section were a broken basket and an inverted metal drum. Also scattered about, but not indicated on the plan, were two arrow shafts, a toy bow, and a pair of bamboo tongs. Three single-outrigger canoes lay high up on the beach, perpendicular to the high-water mark. Five other outrigger canoes were pulled up on the sand, about 50 m west of the camp.

Discussion

Several features in this hut presented a striking contrast to the occupied camp described earlier. First, the sleeping loci of individual families were sheltered by a common roof. Second, the hut consisted of two separate units, although the dividing wall was quite thin, the western part allowing free access either way. While the new site comprised 10 sleeping platforms, the hut contained only 6. In this connection, it was not possible to ascertain whether the four empty shelters located nearby served as bachelors' quarters or as dwellings for married couples.

The large hearth was obviously shared by all the members, and it is quite likely that as there were relatively few occupants, judging by the number of sleeping platforms, most of the food was prepared in this part of the hut.

The range of traditional items almost equalled that of modern ones. Among the latter, the cylinder and mosquito net are noteworthy, as they were not present at the occupied site, and can probably be regarded as representative constituents of the present-day home base of the Onge. The nylon rope, on the other hand, indicated the exploitation of marine resources, particularly turtles. While most of the traditional items were common to those found in the occupied camp, the latter did not contain any trophies of pig mandibles and turtle skulls. In all, there were 6 mandibles in the communal hut and

3 turtle skulls were stored in a basket. Most of these specimens were found in the southern half of the hut, which seems to have been the principal habitation area of the senior members of the group, including the most experienced hunters. The occurrence of trophies has always been a distinguishing feature of such encampments in the Andamans. In fact, when leaving a temporary shelter, it was customary to transport the mementos of successful hunts to the communal hut (Cipriani 1953:74). It was surprising to learn that some of the mandibles were kept in one of the shacks built by the PWD.

The bank of debris surrounding the new camp was conspicuously absent from the immediate vicinity of the communal hut. Moreover, it is interesting to note that the floor of the hut had not been swept at the time it was vacated. Thus the broken basket, shells, etc. would have presumably been cleared away only when the site was reoccupied. Artefacts such as the bamboo tongs could have been reused, although they were found on the ground along with other discarded material.

Inquiries about the putative existence of a special disposal area were answered with a broad sweep of the arm, indicating the forest as well as the beach. However, the fact that the South Bay Onge planned to return to this site later that year probably explains their efforts to keep it relatively clean. Had the temporary encampments been located at a greater distance from the hut, nothing that was transportable would have been left behind (Cipriani 1953:79). In this regard, the occurrence of minimal quantities of refuse within living areas where return is anticipated within a fairly brief period of time seems to be a widespread phenomenon (Stevenson 1982). In addition, the apparent difference in the internal organization of the two encampments described here may be accounted for by the pattern of subsistence, as well as by the length of time that the group in question intended to spend at each locale (for example, see Kent and Vierich 1989). Although I did not witness the burning of debris, one cannot rule out the possibility with reference to the area under study. The urgency of the need to burn refuse would be particularly felt in circumstances where the odoriferous nature of the waste threatens to render the area uninhabitable (Meehan 1982:114; Walters 1988:219).

Small Camp Near W-1

About 60 m to the north-east of the communal hut (site W-1) and approximately 40 m to the north of the high-water mark, stood four

small shelters which faced each other, away from the sea. Shells and ash lay scattered between the shelters, within an area of about 200 sq. m. This encampment had apparently been abandoned on account of the great abundance of fleas, which made it difficult to stand there even for a few minutes. The numerous stray dogs were obviously responsible for the proliferation of fleas, thus compelling frequent moves from one camp to another.

South Bay (E)

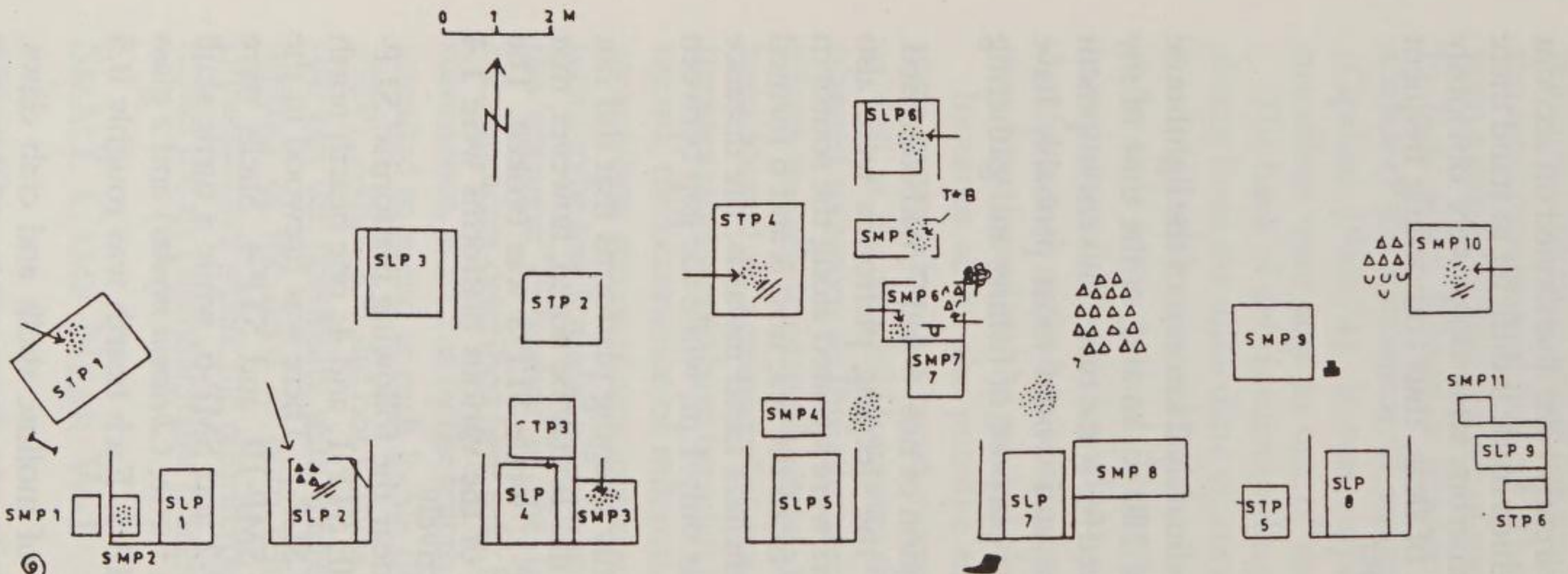
South Bay (E) was located approximately 2 km east of the lighthouse (Fig. VI.5). It covered an area of 280 sq. m and, at the time of my visit, appeared to have been deserted for some time. This encampment was of a semi-permanent nature and would most probably have been used during summer for the purpose of fishing and gathering shellfish.

All the shelters, with the exception of nos. 6 and 7, had collapsed. In shelters nos. 4, 5, 8, and 9 the sleeping platforms were also broken. While most of the shelters were situated along the southern periphery and faced north, away from the sea, nos. 3 and 6 formed the northern boundary. All the shelters faced inwards, the distance between shelters nos. 1 and 2 was only 1 m, while the gap between the other shelters was 2 m.

Numbers 2 and 3 were the only sleeping platforms that did not stand adjacent to the smoking grills. It may be noted, however, that SLP-2, was only 1 m from SLP-1, while SLP-3 was broken. The mean length, width, and height of the various platforms were 1.4 m, 1.16 m, and 0.74 m, respectively.

In all, there were 11 hearths near the following platforms: SLP-2, and 6; SMP-2, 3, 5, 6, and 10; STP-1, and 4; one hearth north of SLP-5 and the other north of SLP-7. There was firewood in the hearths associated with SLP-2, SMP-10, and STP-4. Shells were found in the hearths under SLP-2 and SMP-6, while a turtle skull (most probably that of the green turtle, *Chelonia mydas*) and a glass bottle lay in the ashes under SMP-5. Each hearth was roughly 0.5 sq. m in area.

There were four occurrences of mollusc shells and crab claws. The scatter under SLP-2 consisted of twenty unidentifiable shell fragments. The scatter under SMP-6 covered an area of 60 x 50 cm



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S L P	= Sleeping Platform		Dog bones
S M P	= Platform on which meat is smoked		Lower mandible of pig
S T P	= Storage Platform		Shells
T + B	= Turtle Skull and Glass bottle		*Nautilus* shell
⟶	Indicates that the object is below the Platform		Crab claws
			Metal cooking vessel
	Hearth		Upper portion of plastic bottle
	Firewood		Tree

Fig. VI.5. South Bay (E)

and comprised remains of 29 *Turbo argyrostomus*, 3 spider conch shells (genus *Lambis*), 1 *Nerita lineata*, 2 *Polinices tumidus* (?), and 1 gastropod that appeared to belong to the family Cymatidae. In addition, there were about 300 unidentifiable shell fragments, 25 legs of crab, and 1 coconut shell. The third cluster (90 x 70 cm) was found under SMP nos. 6 and 9 and was composed of 14 crab legs, 4 spider conch shells, and 22 pieces of *Turbo argyrostomus*. Fragments of spider conch also occurrred near SMP-10.

The faunal remains consisted of one turtle skull lying under SMP-5 and a pig mandible which was located just behind SLP-7. The almost complete skeleton of a dog, which was found near STP-1, probably represented an animal that had died a natural death or had been severely injured during a pig hunt and had subsequently died in camp. The other objects on the site consisted of two glass bottles, one metal container, and the top of a plastic bottle.

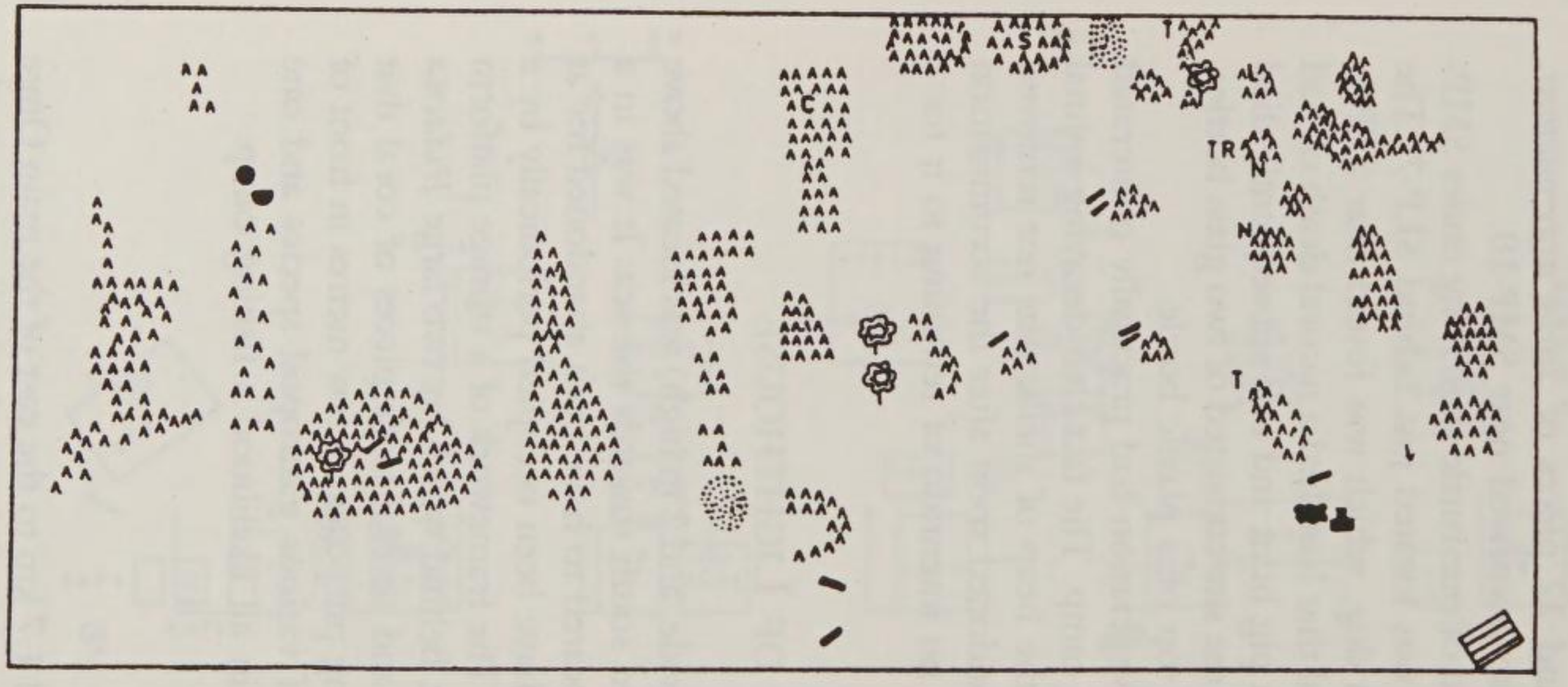
The rapid regeneration of vegetation had practically obliterated all traces of refuse around the camp. The fact that decaying animal matter, such as the dog and the heap of shells, was not removed suggests that the site was abandoned soon after the accumulation of these faunal remains, with no intention of returning to it for a considerable length of time.

Shelter 2.5 Km East of Lighthouse

This shelter (3 m long, 1.8 m wide, and 2 m high) was located above the high-water mark and faced south towards the sea. It was in a dilapidated condition and appeared to have been abandoned for at least one year. This site may have been occupied periodically by a party of two or three people. The framework of a storage platform stood to the east of the shelter, behind which lay two large *Tridacna* valves, one broken *Nautilus*, and several large pieces of coral that were probably used for cooking purposes. A few metres in front of the shelter were fragments of various gastropod species and one *Tridacna* shell. This site was in all likelihood a fishing camp.

South Bay (E-1)

This was a fishing site situated 1.7 km to the east of the main Onge camp (Fig. VI.6). It was located just above the high-water mark,



Platform on which fish is smoked
Fish scales
Hearth
Charred wood
Bottle
Foam
Coconut shell
Coral
Tree

C — Cowrie
L — *Lambis* shell
N — *Nerita* shells
S — Shall pieces
TR — *Trouchus* shell
T — *Turbo* shells

0 1 2 3 4 5
METERS

N

Fig. VI.6. South Bay (E-1)

and covered an area of 336 sq. m. The northern boundary was marked by a 2 m-wide track connecting the South Bay Onge camp with the lighthouse. It appeared that this locale had not been used for almost a year, as it was overgrown with small saplings and was covered with leaf litter.

The only structure at the site was a broken rack that sloped downwards at one end and resembled the ones that are used by the Nicobarese for smoking fish. The noteworthy features at this site were the numerous scatters of fish scales which attested to the exploitation of different species of fish. Also strewn about were gastropod shells belonging to the genus *Nerita*, *Trochus*, *Lambis*, and *Turbo*.

There were two piles of ash (hearths), as indicated in Fig. VI.6, as well as several pieces of charred wood. Miscellaneous items included a small liquor bottle, one coconut shell, and some coral. There were no tools on this site nor were there any remains of vertebrates. In fact, the fish scales provided the only clue to the principal function of this site.

Transient Camps

Along the 3.5 km stretch between the lighthouse and the main Onge camp, there were at least twelve patches of burnt vegetation on either side of the track. On an average, there must have been one patch per 0.29 km. A charred area covered approximately 120 sq. m, and represented the spot where a brief halt had been made during foraging activities.

One of these sites consisted of a pile of ash, close to which were a pig mandible and a few bones. This site, which was 25 sq. m in area, apparently marked the place where a pig had been butchered and cooked. The carcass may have been too heavy to be carried back to camp, which was probably why it was processed at this spot.

There are relatively few clearings and camp sites to the east of the lighthouse, which is probably due to the proximity of the Nicobari village, situated only 7 km away. Moreover, the unrestricted movement of labourers, who were involved in the construction of the lighthouse, is likely to have compelled the Onge to confine their subsistence activities to the west of their base camp.

Discussion

It is now clear that transit camps would disappear within a short time, and leave no traces of their existence. Two types of impermanent encampments have been examined so far. The first type is represented by locales that may have been used several times in the course of hunting and/or fishing activities, depending upon the season of the year. Such sites would be characterized by a simple lean-to or a smoking platform, and would most probably be located near a favourable fishing spot or in the proximity of other food resources.

The second type of site would not be visited more than once or twice, and, consequently, not much thought would be given to the availability of adequate shade and other factors. Moreover, no shelters would be constructed at overnight camps, butchering sites, or places where the food has to be processed before it is transported to the main camp.

Encampments such as South Bay (W-1) were semi-permanent and were occupied mostly during the late monsoon and winter, i.e. from July–August to January. The locations of such sites would be selected with special regard to the availability of fresh water, adequate shade, and the direction of the prevailing winds. Of course, factors such as accessibility to different food resources would also be taken into consideration. A base camp would probably be shifted every year, though within a limited area. Such a site would generally be associated with activities such as cooking and processing food, as well as the manufacture and maintenance of various artefacts.

Traces of most activities at these loci would be few or virtually non-existent for the reason cited above. While large objects are 'subject to size sorting and secondary disposal', only the very small refuse items are likely to survive (O'Connell 1987:104). Moreover, about 5–15 years after a site was abandoned, inorganic matter would tend to get stabilized within the soil, other evidence of habitation having long since disappeared (Gorecki 1985:187). During the period of habitation, smaller particles of refuse and the remains of artefacts would undergo considerable displacement due to trampling and scuffing. In this regard, the activities of children within a camp cannot be underestimated (Hayden and Cannon 1983:159; Gorecki 1985:186).

Subsequent to the desertion of an encampment in the Andamans, decaying matter would be scavenged by crows, crabs, and monitor

lizards (Man 1883:105), thus accelerating the destruction of the site. If the locale was revisited after some time, the remains that would be swept aside would eventually contribute to the midden of debris that had already accumulated when the area was last occupied. Secondary refuse would, therefore, constitute two types of discard: that which was thrown away during the period of habitation, and subsequently, the debris that remained when the site was not in use, subject, of course, to the duration of the stay. The extent to which luxuriant tropical vegetation could obliterate a site could be gauged during a visit to South Bay (W-1) in March 1991, i.e. after a period of five years. Dense forest covered the spot where this encampment had been located. Interestingly enough, however, a row of shelters facing each other stood less than 10 m from the former site; in this case, a rough track separated the two rows of shelters instead of the flimsy partition wall that had characterized the 1986 base camp. This area, therefore, continued to be associated with semi-permanent encampments, although periodically the locales underwent minor shifts. As in 1986, the 1991 base camp had also been temporarily abandoned as, at that time of the year, the Onge had taken shelter inside the forest, away from the beach. The absence of a single roof covering a cluster of platforms can probably be accounted for by the death of several members of this group during the intervening years, which subsequently obviated the need to have any structure resembling the traditional communal hut.

Although this investigation falls short of explaining the various stages in the formation of a midden, it does provide an insight into the dynamics of the process concerned. There is no doubt that while the contents of shell middens yield valuable information on subsistence patterns and local ecological factors, evidence of social organization, mythological beliefs, and linguistic grouping would not survive.

While all perishable material would eventually disappear in an exposed context, it is remarkable how well it may be preserved within the sealed deposits of caves such as Hava Beel on Baratang Island. Regarding the absence of faunal and artefactual remains in the excavation, a similar situation prevailed in certain rock shelters in Papua New Guinea where little cultural material was likely to enter a site if the surrounding area permitted a range of activities to be carried out (Gorecki 1988:165).

Inter-island cultural variations can be expected to manifest themselves in the archaeological record. In this regard, the Onge are

known to have preserved only the mandibles of pigs, while the Great Andamanese preferred to keep the skulls. The Jarawa, on the other hand, were accustomed to binding both the skull and the mandible with strips of cane (Cipriani 1953:74). However, traditions seem to have undergone slight changes from time to time, Cipriani (1954:68) observed, when a senior Onge once ordered all the old trophies to be thrown away and be replaced with new ones comprising the skull and mandible bound together in the Jarawa fashion. Since then the Onge have reverted to the former customs, as witnessed by the faunal remains in the South Bay communal hut.

Variations in burial customs would also determine the composition of a midden. For instance, in Little Andaman burials generally took place within the communal hut, even if the individual had died far away from the camp (Cipriani 1954:66). This is attested to by the occurrence of skeletal remains in middens located on various islands (Cipriani 1966:76). However, while this custom continued to prevail on Little Andaman Island, elsewhere in the Archipelago, the practice of burial and exhumation was carried out away from the camp, which was abandoned only in the event of the death of an adult (Radcliffe-Brown 1922:107). In fact, Man (1883:144) asserted that 'none save infants are buried within the encampment'.

The Enigma of Gender in the Archaeological Record

It is interesting to note that although the society of the Andaman Islanders is by and large egalitarian, economically there is a marked sexual division of labour. It appears that subsistence activities, the undertaking of which was determined by the sex of the persons concerned, came to be associated with the tools specific to their execution. This in turn extended to the raw materials involved and to their procurement and processing.

As in the case of the shell of the *P. coaxans*, an item of economic significance assumed symbolic value, which in turn acquired overtones of gender-specific chores by virtue of its relation to the sexually determined allocation of certain tasks. This apparently did not apply to artefacts, such as clay pots, which were made by both men and women (Man 1883:399; Radcliffe-Brown 1922:473). Moreover, the *Polymesoda* seems exceptional in that its collection was not

restricted to either sex, although its use as a knife and scraper was especially popular among men. Perhaps this accounts for its use by male dancers and the superstition concerning sharks. With respect to the latter, it was men who undertook fishing and turtling in deep waters, whereas women confined themselves to the collection of molluscs for edible purposes, and fishing with hand nets in shallow water, either in the sea or in streams.

With regard to the disposal of the dead, what is interesting is the practice of exhuming the bones of the deceased person a few months after burial. The skull would then be cleaned and decorated with ochre as well as with strings of shell, and would be worn round the neck of the nearest relative of the deceased (Man 1883:143). This honour was accorded to any person who had died, regardless of sex or age. The other bones were converted into necklaces by female relatives and distributed among friends who treasured them for their curative properties and to ward off evil spirits (Man 1883:86). These 'spirit-bones' (*lau-toi*, *cauga-ta*) constituted 'a renewal of social relations with the dead person, after a period during which all active relations have been interrupted owing to the danger in all contact between the living and dead' (Kuper 1977:83–4).

'Like all their other possessions these relics are lent or exchanged, passing from one person to another, until sometimes a skull may be found in the possession of a man who does not know to whom it belonged' (Radcliffe-Brown 1922:113). It is but natural that, with the passing of time and memories, a bone necklace would lose its value and be discarded, perhaps to be replaced with one representing a recently deceased person.

It is indeed ironical that whereas faunal remains would be associated with a particular encampment, the human skeletal parts in a midden may belong to members of other groups. Moreover, their variable occurrence would not be determined by the modes of disposing of the dead, but by the fragmentation and distribution of the bones of people, irrespective of sex or age, from diverse locales!

Thus, faunal remains resulting from hunting expeditions (Fig. VI.7) were differentially modified and manipulated, as was the case with molluscs. Artefacts such as barbs, points, and necklaces or belts of animal bone were related to subsistence activities and, in respect of personal decoration, to the social sphere. From the practical point of view, tasks were divided between men and women; the latter being largely responsible for ornamentation, including body paint.

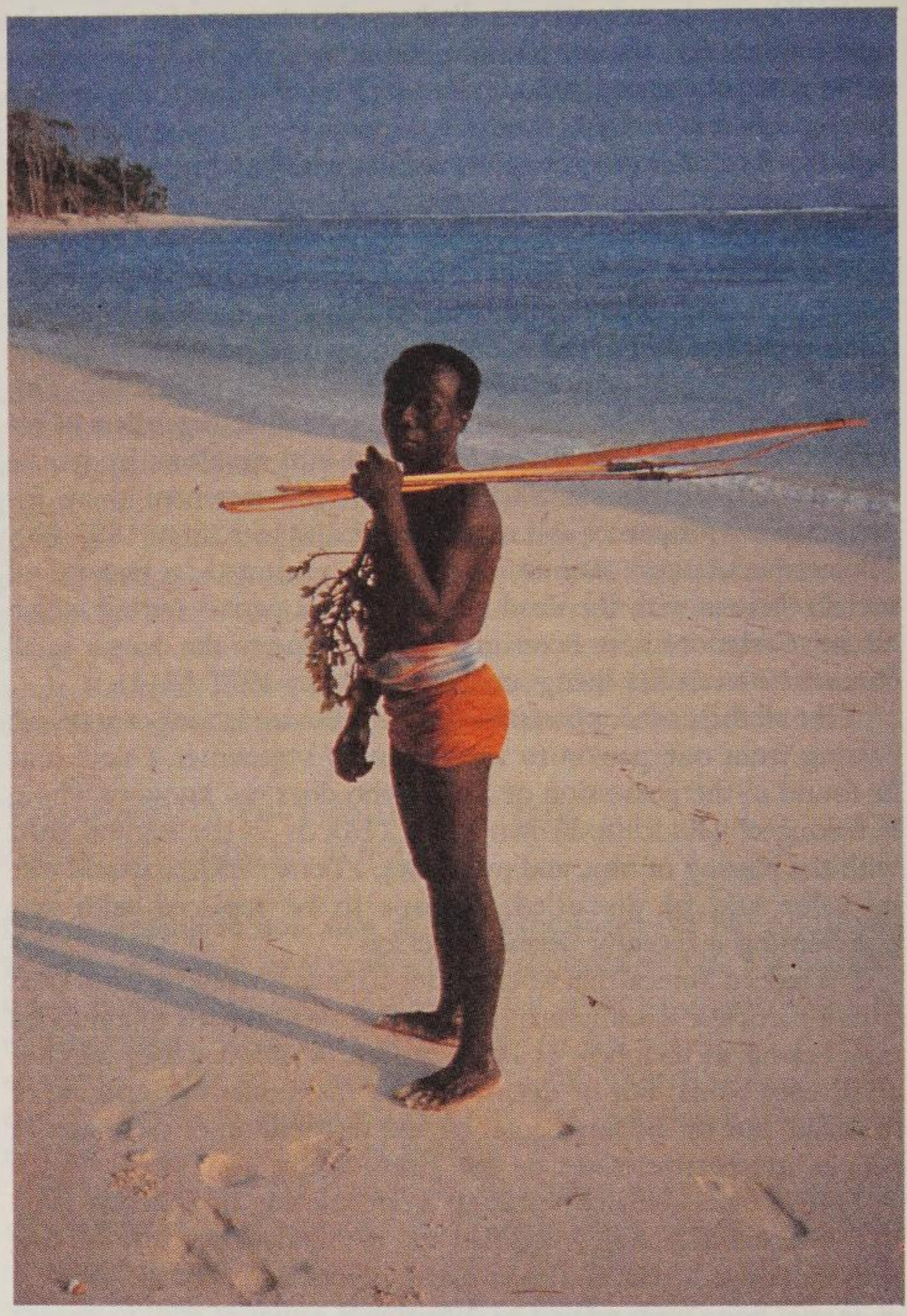


Fig. VI.7. An Onge hunter returns to South Bay after an unsuccessful hunting expedition. The heads of his arrows are fashioned out of pieces of iron.

Hunting trophies notwithstanding, an ever-growing pile of bones was a source of pride for the entire community. This perception was shared by the group as a whole, whereas the process of discarding waste entailed collective effort in which the issue of gender simply did not arise.

Discussion

These data demonstrate the inherent flexibility in the organizational characteristics of hunter-gatherers. This is further exemplified by the Agta of eastern Luzon, in the Philippines, among whom division of labour is subject to individual needs and preferences whereby women adjust hunting and child rearing to each other and to their other subsistence efforts (Estioko-Griffin and Griffin 1981). In this system, hunting techniques are not determined by the sex of the hunter.

Research among the Kuruk fishermen of the Indravati Valley in central India revealed that despite each family member having his/her share of household chores, there are no rigid rules that bind a person to a particular task in life, nor is there any well-defined hierarchy of economic organization within a community. Hence work is divided among family members to suit their daily requirements in the most practical way, so that spontaneous cooperation in domestic and economic life becomes essential (Cooper 1997b:88).

As a rule, however, important activities do entail a certain amount of division of labour between the sexes. Thus, the collection of edible plants is done mostly by women and children, while men usually undertake the heavier tasks of setting drift-nets, building weirs and traps, and hunting. This dichotomy in the allocation of vital tasks according to sex and age is apparently in the interests of achieving the highest level of efficiency and productivity, highlighting, as a result, the element of expediency underlying forager subsistence; this is seen in the case of a subsection of the Maria Gonds of Bastar district (Cooper 1997b).

Whether it is among the Gonds or the Andaman Islanders, the contribution of random foraging, especially by children, is significant enough to warrant mention here. Time and again I have been amazed at the ability of young boys and girls to procure birds, fish, and other

food. Some of these activities demand considerable skill, a fact which the adults seem to take for granted as being part of their daily routine. This 'very real' contribution by children to a forager economy has often been overlooked, as pointed out by Gregg (1979–80:130) with reference to the Semang of Malaysia. With respect to the Hill Pandaram of south India, 'a major proportion of the animals captured or killed are secured during random foraging' by both men and boys (Morris 1982b:78). These factors need to be taken into consideration when attempting to correlate tool kits in an archaeological context with supposed male and female economic roles.

With regard to the Andamans, it is apparent that without referring to anthropological sources and recent surveys, it is impossible to discern sexual division of labour, particularly when the rough distinction between men's hunting and women's gathering technologies would be confounded with the variable tool emphases of the seasonal cycle.

However, subsistence strategy and local environmental adaptation are, to a great degree, preserved. Thus the interpretable portion of the archaeological record is inherently skewed towards a representation of the general processes of cultural interaction with the environment, and away from aspects of specific cultural idiosyncrasies less directly connected with the adaptive function.

To conclude, the Andaman midden deposits embody the culmination of a collective effort in which gender is inherently indistinguishable, having been obscured through variable archaeological visibility, and a socio-religious system wherein such distinctions are not fostered.

The Position of Women among the Andaman Islanders

With regard to subsistence, the economic contribution of women was on par with that of men in terms of the daily haul of aquatic fauna and plant foods. With reference to the Onge, Sarkar (1974:586) observes that:

> when unfavourable weather prevents open sea fishing, the Onge for aquatic food are to depend only on the catches made by the females in the coastal belt. Thus by introducing the clear cut division of labour between the sexes and also their distinct operational zones, the Onge have ensured the regular supply of fish for their daily diet.

Although sexual division of labour also prevails among other hunters and gatherers, among the Andaman Islanders there was a generalized female involvement in ritual and political activities. In fact, from all the rituals described by Man and Radcliffe-Brown women are never excluded. The roles they played, in these ceremonies suggest that they were equally important to, and participated fully in, the symbolic activities.

In the absence of institutionalized leadership, there were persons of influence who lacked enforceable authority and maintained their status through personal achievement, for example hunting success, experience, and wisdom. An equivalent status position existed among women. In this connection, Radcliffe-Brown (1922:134) records an instance when arrangements to end hostilities between groups were made by women. This was followed by a ceremonial dance in which the women of the visiting group not only participated, but gave the men of the other group a good shaking, perhaps as a reminder of their displeasure.

Although kinship was the basis of social organization, terms of address emphasized status and respect, rather than denoting consanguinity. Moreover, status was strictly age related, and was accorded to all senior persons, irrespective of their sex. Thus, generation grading, not gender distinctions, determined social differentiation among the Andaman Islanders.

Women played a particularly important role in two symbolic activities: scarification and corporeal decoration (Fig. VI.8). Young girls and boys were submitted to scarification from early childhood. The most conspicuous gender distinction was manifested during the ceremony marking the end of the abstention from eating pork. On this occasion, a boar was killed for a youth, and a sow for a girl; it was not necessary for both to undergo these rituals simultaneously. At the time of scarification, the cuts down a boy's back had to be made by a man with the sharp blade of a pig arrow.

Clay decoration and patterns were executed during extremely elaborate ceremonies which intervened at intervals during the entire human cycle. These ceremonies included initiation at puberty for both boys and girls, marriage, end of mourning, and communal peace making. In addition, there were special occasions which required body painting and dancing, such as during illness, at meetings of different local groups, at the death of a relative, before

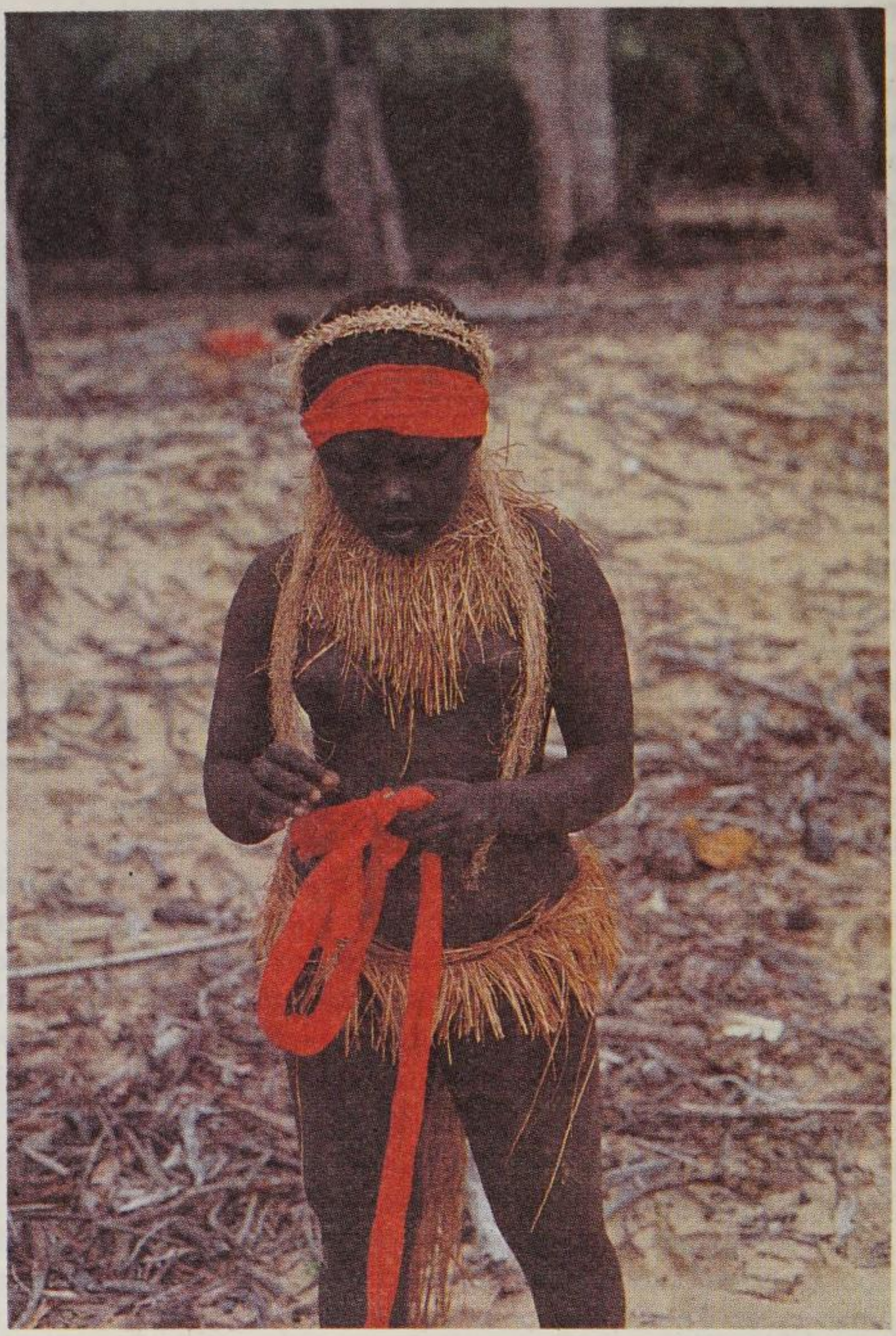


Fig. VI.8. A Jarawa woman with girdle and neckband of plant fibre. The red ribbon was given to her by government officials as a gesture of friendship. Such items are included in the monthly gift-dropping programme of the Andaman administration.

burial, and after hunts and large meals of animal meat. Once again, women had the monopoly of this symbolic representation.

This suggests that women were not only included in the ritual human cycle, but also directly participated in fundamental activities. Since little is known about the values of the Andaman Islanders, my purpose is not so much to prove that the Andaman situation reflects male and female equality, but to show that, within the scope of the available information, women created links of cooperation between persons, families, and even local groups. By their economic and specific ritual and political functions, they were major contributors to the economic/social life of the group.

Regarding sex roles, it must be stressed that among the Andaman Islanders, both male and female roles, if differentiated, were essential to the whole group and mutually supportive. Every member of a group not only controlled the production of food and the manufacture of goods, but was equally responsible for ritual cooperation and peace. In this society, differentiation did not give way to demonstrations of superiority or prestige. For example, the husbands of Andamanese women are known to have shared with their wives pregnancy-related prohibitions of food and to have attended the delivery of their children.

Public/familial spheres are often said to be universal opposites: women are confined to childbearing; men take care of political affairs and extra-communal problems. However, as we have just seen, among the Andamanese elders, decision making about production, distribution, settlements, disputes, and ritual feasts was often collective. Men individually made decisions about the activities for which they were responsible, and so did women. At the ritual, political, and ideological levels, women performed the function of mediators and participated in public life, which apparently did not lead to any conflicts between the sexes. The place of women in the society of the Andaman Islanders thus reflects the relations of equality, cooperation, and solidarity that foraging societies require.

In this respect the position of women in the Andamans seems rather different from that of other hunting and gathering societies in South and South-East Asia. Among communities such as the Birhor, the Paliyan, the Maria and Muria Gond, the Semang, and the Agta there appears to be an absence of systems indicating the control of men over women's labour and reproduction, and neither is there any rigorous separation of men and women. However, nowhere else, except in the Andamans, is there to be

found such a specific inclusion of women in political as well as ritual life.

Why is this so? At this stage, it would be difficult to find a convincing answer given the lack of a simple relationship between foraging as a subsistence mode and a specific pattern of social organization.

The Andaman Islanders vis-à-vis the Forager/Collector Model

The complex nature of adaptation in the Andaman Islands has often been underestimated by scholars, who tend to believe that the Andaman Islanders subsist primarily on coastal resources (e.g. Bailey et al. 1989:63). That this is an erroneous assumption has been suggested by the limited role of coastal resources in the diet of the Onge (Bose 1964). This is supported by the determinants of population density in the Andamans, which indicate that each square mile of forest supported slightly over two people, while the coast could only support 0.7 person per linear mile (Erickson and Beckerman 1975). This corroborates Man's (1882:281) statement that those living in the heart of the forest were more numerous than those inhabiting the coastal areas.

In fact, the technological repertoire of these Islanders is ideally suited for the efficient exploitation of inland resources. Moreover, their subsistence strategies are generally more complicated than those of desert and tropical peoples (Oswalt 1976:192). It is apparent, therefore, that neither geographical nor cultural differences are strongly manifested in subsistence efficiency in the Andaman Islands.

Moreover, Morris (1982a:455) has observed that similar tropical forest environments such as those of the Andamans and the Ghat mountains of south India, wherein dwell the Hill Pandaram, are not necessarily conducive to the evolution of uniformity in group structures among the communities involved. Thus, among the Hill Pandaram, the Kadar and the Paliyar, the family constitutes the focal unit, whereas among the Andaman Islanders, the local group emerges as the dominant social unit (Morris 1982a:455).

Since it is obvious that ecological determinants alone were not responsible for the development of the system of adaptation in the Andamans, we must deal with the questions about how the Islanders may be categorized, and whether the criteria currently employed for

this purpose are relevant in this case. In this regard, Binford (1980) has offered a useful model that divides contemporary hunter-gatherer societies into two categories, namely foragers and collectors. The former are generally characterized by 'high residential mobility, low bulk inputs, and regular daily food-procurement strategies' (Binford 1980:9). The collectors, on the other hand, store food for at least part of the year, and organize themselves into 'task groups seeking to procure specific resources in specific contexts' (Binford 1980:10).

Furthermore, Binford (1980:16) assesses Murdock and Morrow's (1970) estimate of the influence of 'effective temperature' (ET) on storage dependence among hunter-gatherers. Considering that storage is more widely practised in a temperate climate, as opposed to tropical environments, Binford (1980:16) suggests that the Andaman Islanders have been miscoded as belonging to the group associated with limited storage, implying, therefore, that they should be more appropriately termed collectors.

When viewed from the perspective of the relatively long-term occupation of camps within the forest, the inland population (*eremtaga*) may be identified as collectors, while the mobility strategies of the coastal group would more closely approximate the forager model. In the case of the Andaman Islanders, the former clearly outnumbered the latter.

Binford (1980:17) associates 'coarse-grained' deposits with poor resolution between archaeological remains and specific events, in keeping with low mobility, whereas 'fine-grained' material is applicable to a high rate of mobility. The Andaman middens, however, are definitely coarse-grained and were built up by the mobile coast dwellers as well as by the relatively sedentary inhabitants of the forests, although distances between sites vary. Another factor that complicates matters is that midden accumulations often served as platforms on which encampments could be established. The implications of a mound serving a dual purpose, as it were, would render it difficult to adopt Binford's clear-cut distinction between assemblages.

The Implications of Storage Practices among the Andaman Islanders

As the accretion of stores is supposed to be a vital distinguishing factor between collectors and foragers, this subsistence strategy is

examined with reference to its significance in the economy of the Andaman Islanders. The following practices need to be examined in this respect:

(a) keeping half-cooked pork and turtle meat in a bamboo container for a few days;
(b) burying jackfruit (*Artocarpus chaplasha*) seeds for consumption during the monsoon;
(c) imposing a taboo on harvesting the tuber of *Dioscorea glabra* during the season of new growth in the belief that Puluga, the mythic being connected with the north-east monsoon, needed the yams at that time. A similar taboo protected the seed crop of *Entada scandens* and the palm cabbages of *Caryota sobolifera* (Radcliffe-Brown 1922:152–3);
(d) no attempt was made to domesticate any animals, although 'small pigs, if caught alive, were sometimes kept and fattened up for slaughter' (Man 1883:349–50).

Storage among the Andaman Islanders was, therefore, minimal. This was particularly so since jackfruit seeds did not constitute an indispensable item of food during the rains, when other terrestrial plant and animal resources were abundant. The ritual prohibition concerning the exploitation of certain yams and tubers, however, seems only a step away from the deliberate or accidental dispersal of seeds of valued fruit trees in the vicinity of camp sites, as practised by the Malaysian 'Negritos' (Hutterer 1983:176). Similarly, the large stands of cycads in the south-eastern part of Australia's Cape York Peninsula, have resulted from 'the Aboriginal manipulation of the woodland ecosystem' (Harris 1977:429). In the eastern Cape York Peninsula, wild yams could be harvested only with the permission of the head of the family or the clan in whose territory the yams grew (Harris 1977:434). While none of these examples is illustrative of formal cultivation, they do illumine various means of exercising partial control over the collection of important plant foods, thereby ensuring a steady supply of these resources. A similar strategy, albeit in the guise of a ritual taboo, seems to have formed an integral part of the economy of the Andaman Islanders. However, animal domestication per se among the Andaman Islanders can be ruled out, as young pigs, when caught occasionally, were killed for food and were not bred in captivitiy.

Thus, resource exploitation in the Archipelago entailed some planning and management, which in turn, was (and still is)

complemented by a range of portable food containers (baskets, and wooden and metal containers, clay pots having gone out of use some time ago). Such vessels are distinctive of the culture of 'relatively sedentary peoples', although storage per se does not preclude a nomadic lifestyle (Ingold 1986:206, 208).

The organizational variables that distinguish foragers and collectors have been defined by Woodburn (1980, 1982) in terms of 'immediate-return systems' and 'delayed-return systems'. This dichotomy, however, does not take into account the modes of resource extraction that incorporate elements of both the systems (Ingold 1986:214). Ingold cites the example of swidden cultivators, many of whom are able to harvest their plots with a regularity that does not necessitate storage, whereas many hunters derive an immediate benefit from their kills, but are compelled to store some of the meat in response to unpredictable supplies. In fact, the economies of the Australian aborigines combine strategies in which the return for labour is delayed and those in which it is immediate (Bird-David 1992:25).

An economy based on horticulture, such as that of the Nicobarese, provides some interesting points of reference against which the economic base in the Andamans may be juxtaposed. Here we have the opportunity of comparing the mechanism of storage, which operates at different levels of subsistence in a limited area (from north to south, the combined length of the Andaman and Nicobar Archipelagos is 530 km, with only 120 km separating the islands of Little Andaman and Car Nicobar).

The population of the Nicobar Islands is largely of Mongoloid stock, comprising a mixture of Burmese and Malaysians. Their economy is based on horticulture and pig-herding, coconuts being the most important medium of barter in both inter-island and foreign trade. It is surprising to note, however, that no surplus of any kind is generated through cultivation. At most, it is considered necessary to ensure that there are enough coconuts for the pigs before selling the harvest (Justin 1990:86)!

Contrary to most expectations, pig herding does not yield any economic benefit, as these animals are valued principally for their meat which is consumed during feasts. The pig, in this context, is primarily a symbol of status and prestige. Of course, the animals that are bred for ceremonial purposes are given a special diet, while the others are allowed to forage in the forest. Hunting is confined to wild or feral pigs.

One would expect that storage would play an important role in a horticultural economy like that of the Nicobarese. But this is certainly not so, as shown below:

(a) The *Pandanus leram* is an indispensable item of food. The paste made out of the farinaceous substance contained in the seeds can be stored for up to three months. In the dry season, however, the *Pandanus* tree gives a poor yield of fruit, which has then to be substituted by rice.
(b) Fresh pork (or wild pig), like fish, is cut into strips, salted, and dried in the sun for several days, after which it is kept in a jar covered with salt.
(c) Pork fat can be preserved for a month or more, and is added to the *Pandanus* paste as if it were butter.
(d) In the islands of Teressa and Bompoka crabs are caught, fattened in cages, and let out when one is wanted for boiling.

These rudimentary means of storage demonstrate that the accretion of surplus is not an economic concern in the Nicobar Islands. This can partially be explained by the fact that coconuts, which constitute the principal item of trade, can be harvested at any time of the year, contingent on need, and freshly plucked nuts are always preferred. Moreover, the *Pandanus* takes precedence over the coconut in the local diet. In addition, the former is available throughout the year, except during the dry season, and is generally complemented by yams and other food crops.

Representing a subsistence level that is, in many ways, similar as well as different from the ones outlined above, the Shompen of Great Nicobar Island are semi-nomadic forest dwellers (Rizvi 1990). Their movements are regulated by the availability or otherwise of fruit and game. They subsist mainly on the fruit of *Pandanus leram* and are organized into bands that establish their camps near *Pandanus* groves. They also practise horticulture on a small scale and are known to cultivate yams, *Pandanus*, and a few other plants. Specific foraging activities are allocated to small task groups involving the members of a band who are rotated regularly. This allocation of variable 'effort-risk' foraging work ensures that subsistence activities are equally shared by all band members. In the context of equal access to all the available food at a forest camp, this behaviour is seen as an off-setting mechanism to any claim of individual ownership

of food resources. The undifferentiated seasonality of the Great Nicobar ecosystem acts as a catalyst to this foraging behaviour.

In the case of the Shompen, therefore, we find that, in spite of incorporating primitive horticulture and limited food storage into their economic base, these forest dwellers fit in well with the ecological model of 'least-effort' and 'least-risk'.

Although the level of subsistence in the Nicobars differs from that in the Andamans, it is noteworthy that in the more densely populated islands of Car Nicobar and Chowra, villages are cleared of undergrowth to remove all refuse far away. Moreover, dried coconut shells are burnt in the night so that adequate light is available, while at the same time the shells are efficiently disposed of.

In the relatively thinly populated central and southern groups of the Nicobar Islands, fewer sanitary precautions are observed, and litter, especially broken coconut shells, lies close to the huts. Moreover, care is not taken to bury the dead at a sufficient distance from the villages, with the result that the natives suffer from various ailments. In the islands of Bompoka and Teressa, refuse is carried away in baskets and thrown on the foreshore.

In light of the above, it is interesting to note that explorations carried out by me in the Nicobars in 1989 yielded only a few midden-like deposits, particulary on the islands of Teressa and Chowra. In Great Nicobar Island, an attempt to locate a Shompen encampment that had been abandoned for about a year proved even more difficult, for the regeneration of dense tropical vegetation had not only obliterated all traces of the site, but it was also rendered virtually impenetrable on account of the thick undergrowth.

Concluding Remarks

In order to avoid polar types with reference to a subsistence gradient, as evident in the Andaman and Nicobar Archipelagos, Bird-David (1992:25) posits 'a prototype immediate-return system and diverse (economic, social, ideological) elaborations on it, especially on the theme of investment'. As an example of the prototype immediate-return system, Bird-David cites the Nayaka of the Nilgiri-Wynaad in south India.

This brings into sharper focus the current dilemma of defining the various ethnic groups of South Asia. While Fox (1969) collectively

identifies them as 'professional primitives', other scholars perceive them as marginal hunter-gatherers who have been compelled to retreat from their original territories in the face of agricultural encroachment, often seeking employment in cities in order to supplement their traditional subsistence activities (for example, see Nagar and Misra 1989 and 1990 with reference to the Kanjars and other hunting-gathering communities in the Ganga Valley of Uttar Pradesh). On the other hand, many other groups, such as the Birhor of the Chota Nagpur Plateau (Smiley 1979–80), the Hill Pandaram of Kerala (Morris 1982b), the Kanchapuri Yerukulas of south India (Murty 1981), and the Kuruk fishermen of Bastar District (Cooper 1997b) combine hunting, food-gathering, and fishing with contractual trade and barter. The need to understand this broad spectrum of hunting and food-gathering economies in dynamic interaction with different societies and changing environments seems all the more urgent if the South Asian ethnographic record is to be correctly interpreted.

Moreover, given the long history of coexistence in South Asia of societies representing widely different economies and social structures, distinctions based on the 'tribal' or 'indigenous' status of people are totally unjustified (Béteille 1998). To cite some examples, symbiotic relationships involving the barter of forest products, procured by foragers, in this case the Hill Pandaram, for grain and other commodities from agrarian settlements seem to have begun at the dawn of the Christian era, when various communities formed part of a highly efficient political system (Morris 1982b:12). In fact, contact between Nayaka and non-Nayaka is 'integral' to the social structure of the former (Bird-David 1991).

Exchange systems between diverse economies were known to flourish as far back as 4000 years ago, as in the case of the Harappans of Lothal, in Gujarat, who procured much of their raw material from neighbouring hunter-gatherers in exchange for surplus finished products, including ceramics and metal objects (Possehl and Kennedy 1979). In another instance, foragers were providing important wild forest trade items to Broach, on the coast of Gujarat, by the first century AD (Stiles 1993).

With respect to the Beda hunters of Karnataka and the Bhils and the Gonds of central India, Guha (1999) has not only questioned their 'tribal' identities, but has also examined their role in shaping the political history of their region and in modifying their environment

over a period of time. To take this point a step further, the proven incidence of variable gene flow between prehistoric populations with different economic backgrounds belies the attribution of direct descent from an ancient gene pool of any South Asian community, regardless of its 'marginal' position, either geographically or socially (Kennedy 1999:178).

Although this discussion has temporarily digressed from the main focus of this study, it does bring to mind the issue of the origins of the Andaman Islanders, to which the next chapter is devoted.

VII

Origins of the Andaman Islanders

Local Myth and Archaeological Evidence

As the origins of the Andaman Islanders remain unresolved, it was thought that local myths may provide clues which could be examined archaeologically. Fortunately the anthropological literature on the Andamans abounds in myths concerning the socio-religious beliefs of the indigenous population (Man 1878 a and b, 1883; Radcliffe-Brown 1909, 1922), among which the beliefs surrounding Wot-a-emi are of particular interest to us.

Although this line of inquiry has led to negative results, it has made it possible to view the archaeological record from the perspective of those responsible for creating it, thus offering a socio-religious dimension that widens the scope for interpreting the past. The knowledge that certain locales were imbued with mystery, alters their significance for the archaeologist. Magico-religious beliefs, although not leaving behind tangible traces of their existence, would indicate where communal gatherings may have taken place, thereby perpetuating the significance of local myths and ensuring the continuation of age-old traditions.

Wot-a-emi: The Myth

The first mention of this place was made by Man (1878a:106), who referred to it as 'Wota-Emida'. Supposed to have been the scene of 'creation', it was located 'somewhere on the south-east corner of

Middle Andaman' (Man 1878a:106). A stone at this spot was reputed to display undecipherable hieroglyphics that were engraved by Tawmoda, the first man. Man (1878b:455) subsequently saw

> a large piece of sandstone, perhaps 30″ in diameter, situated on the shore of a large shallow sheet of water which is enclosed almost entirely by the closely adjoining island and the mainland, and the wonderful inscription consisted of nothing more or less than deep incisions caused apparently by the action of the sea.

This myth was further elucidated by the Puchikwar group of Andaman Islanders interviewed by Radcliffe-Brown (1909:261–2). According to the Puchikwar, Ta Patie, the first Islander, lived at Wot-a-emi, while Biliku, a mythical being associated with the north-east monsoon, resided at Tol-loko-tima across the strait. The ancestors had no fire at that time, but Biliku made a fire for himself from the wood of the 'Parat' tree. While Biliku was asleep, Luratut, the kingfisher, stole some fire, whereupon Biliku awoke and hurled a lighted brand at Luratut, and burnt him. However, Luratut managed to convey the fire to the people at Wot-a-emi. Notwithstanding other versions of this tale, there seems to be a general consensus regarding the transformation of the kingfisher into a man after the loss of his tail and wings.

Location of the Mythical Site

In its geographical location, Wot-a-emi represents a large sandy patch on the north-eastern tip of Baratang Island. As Tol-loko-tima is situated in the north-east, Man (1883:150) surmised that the source of fire would most probably have been the Barren Island volcano, about 100 km to the east of Baratang Island. When I visited Barren Island in 1992, the volcano was still spewing ash and smoke as a result of the eruption in 1991. However, as Tol-loko-tima is a mythical place, it need not necessarily have been identified with Barren Island; rather, it was probably regarded by the Andaman Islanders as the general direction from which both the north-east monsoon and the source of fire derived. The Islanders probably did not know of the existence of Barren Island in view of their apparent inability to venture far from the coast in their flimsy outrigger

canoes (Man 1883:368). It seems that if fire was initially obtained from Barren Island, the event did not take place within the memory of the Islanders questioned by Man and Radcliffe-Brown, but may have occurred in the distant past and was subsequently incorporated into local myth.

When some of the South and Middle Andamanese were able to visit Barren Island in a station steamer, they called it *mola-tarchona* (literally, Smoke Island), in allusion to the smoke which is almost always seen rising from the volcano, and which they accounted for as due to a fire which *Puluga* kindled (Man 1883:99). Of course, *Puluga* is none other than Biliku, and this instance demonstrates how beliefs can be reinforced and perpetuated.

Ancient Encampments

Instances have already been provided of middens serving as convenient platforms on which camps could be established. Towards the end of the nineteenth century, a similar site was discovered at Wota-a-emi by Lapicque (1894:362–3). The large midden sloped towards the sea; the other side, facing inland, was composed of earth (Lapicque 1894:362). The mound surface formed a circular platform, along the periphery of which stood the remains of huts which appeared to have been abandoned less than two years before their discovery by Lapicque (1894:362). Among the artefacts recovered from the surface of the site were bones, shells, and the bases of glass bottles from which flakes had been removed (Lapicque 1894:362–3). As mentioned earlier, flakes from bottles substituted for stone flakes which were traditionally used for scarification and shaving. The glass bottles had obviously been obtained from the British penal settlement at Port Blair.

During his visit, Lapicque (1894:363) also found a recently abandoned encampment at the mouth of Homfray Strait, a little north of Wot-a-emi. The huts were again arranged in a circle on a hillock, the top of which had been levelled for this purpose. Steps leading to the water's edge had been cut into the sides of the hillock and were reinforced by bamboos. Shells lay scattered on the floor of the encampment and along the sides of the hillock (Lapicque 1894:363).

Archaeological Evidence

A survey in 1989 relocated the midden at Wot-a-emi, as reported by Lapicque a hundred years ago (Cooper 1993a). True to his description, the midden faces the sea although the huts standing over it have long since disappeared. The 2.7 m-high mound rests on a rocky platform; the lower deposits along its southern edge, level with the head of the man shown in Fig. VII.1, are being steadily washed away by tidal waters. Shells and other material on the mound surface, which is almost hidden by a mass of vegetation, are slipping over the edge and breaking away in large chunks. The original north–south length of the site must therefore have exceeded its recent measurement of 22 m.

The basal layer was scraped, and a sample of calcified shells, belonging mostly to spider conches and clams, was removed for radiocarbon dating, the age result being 1530±70 years BP (BS-843).

Contrary to expectations, this date does not enhance the antiquity of human occupation in the Andamans. Instead, it closely matches the ages of other sites on and around Baratang Island (see Table VII.1).

Table VII.1. Radiocarbon determinations from the Andaman Islands

Site	Depth	Material	Lab. no.	Uncalibrated determination (BP)
Wot-a-emi	2.4 m	Shell	BS-843	1530±70
Hava Beel cave	1.0 m	Organic matter	BS-679	0
Hava Beel cave	2.0 m	Organic matter	BS-677	210±90
Hava Beel cave	2.15 m	Organic matter	BS-676	320±130
Hava Beel cave	0.40 m	Organic matter	ANU-5298	102±10
Hava Beel cave	0.85 m	Organic matter	ANU-5299	98±09
Hava Beel cave	1.0 m	Organic matter	ANU-5300	230±60

(Contd.)

Table VII.1 (Contd.)

Site	Depth	Material	Lab. no.	Uncalibrated determination (BP)
Hava Beel cave	2.0 m	Organic matter	ANU-5301	240±80
Hava Beel cave	3.5 m	Organic matter	ANU-5302	1540±110
Beehive hill	1.2 m	Shell	PRL-1237	1370±100
Yerata nala	1.5 m	Shell	PRL-1238	1470±100
Chauldari	0.5 m	Shell	BS-618	1570±100
Chauldari	1.1 m	Shell	BS-617	1350±100
Chauldari	2.1 m	Shell	BS-600	2070±100
Chauldari	2.9 m	Shell	BS-598	2070±100
Chauldari	4.45 m	Shell	BS-599	2280±90
Chauldari II	2.5 m	Shell	BS-1039	329 ±90

Contemporaneity of Sites

The basal date of 1540±110 BP for the Hava Beel cave compares well with the ages of the middens at Wot-a-emi as well as at Beehive Hill and Yerata Nala in Middle Andaman Island. The latter site is about 1.5 km west of Beehive Hill and rests on a rock at the mouth of the eastern bank of the stream. To the west of the site, the swamp stretches for about 250 m. In an east–west orientation, the mound is 17.8 m long, whereas the length along the north–south axis is 17.3 m. The height of the midden corresponds with that of the one at Beehive Hill, and it is essentially composed of shells of Anadara and Polymesoda species. The apparent contemporaneity of these sites not only reduces the importance of Wot-a-emi as an ancestral abode, but highlights the disparity between archaeological facts and mythical 'reality'.

Further proof of this has been provided by the shell midden at Chauldari, all the exposed layers of which have yielded bones of *Sus scrofa*. This is at variance with the late appearance of pig in the Beehive Hill midden, which led Cipriani (1966:66–73) to hypothesize that pigs were introduced to the Andamans fairly recently. To Heine-Geldern (1963) this discovery seemed to corroborate the Andamanese legend, according to which pigs

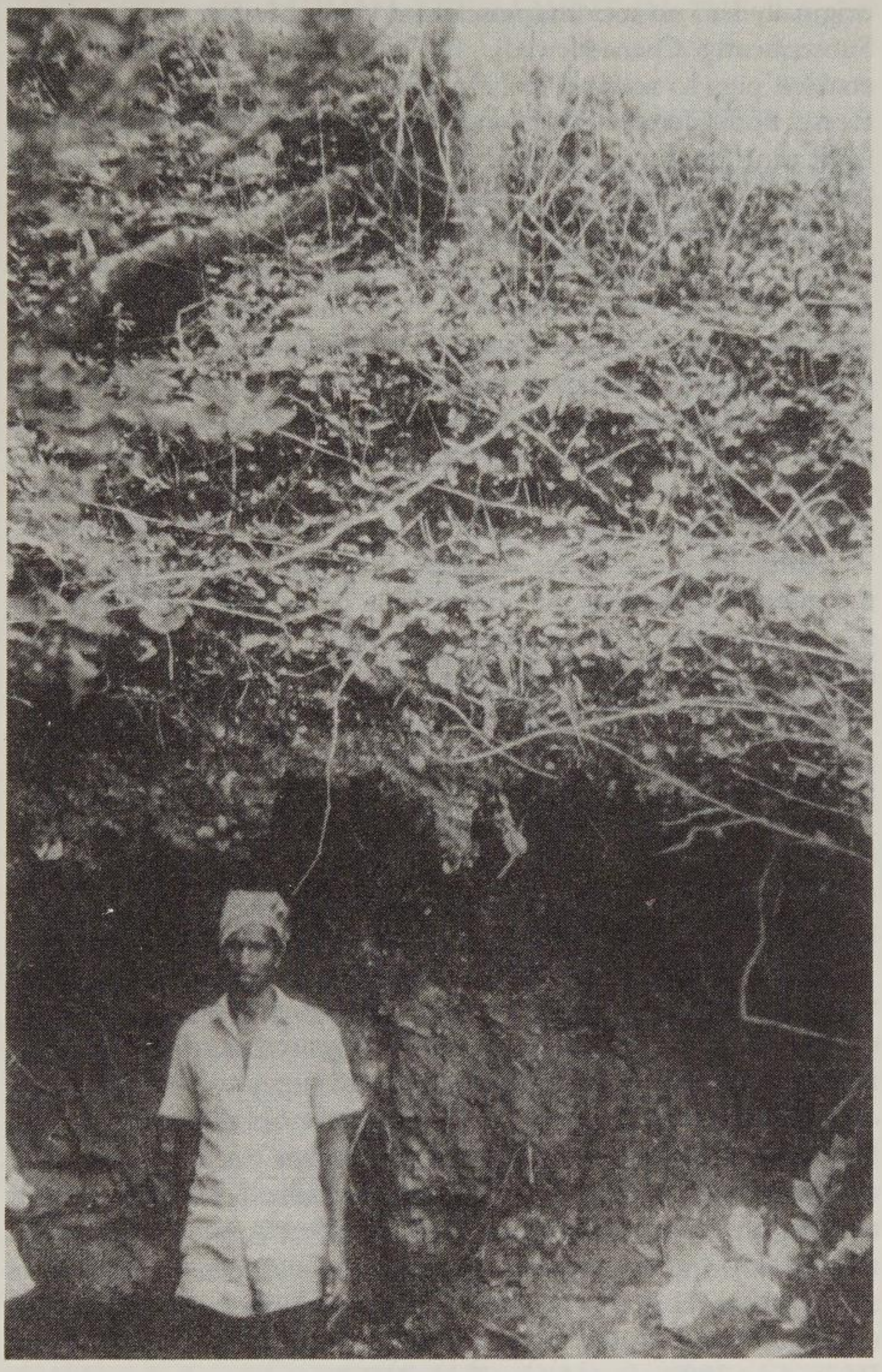


Fig. VII.1. Shell midden at Wot-a-emi

originally had no ears and noses, and were therefore easily caught. Subsequently, Chena-elewadi, the wife of Tomo (the first man), enabled pigs to see and to hear, after which they ran wild in the forest. Both Heine-Geldern and Cipriani interpreted this legend as indicating that pigs were introduced into the Andamans as domesticates, which later became feral.

The question needs to be reconsidered, since most of the pig bones from the Chauldari midden were recovered from the lower levels, from 2.3–4 m. Moreover, the putative existence of two varieties of pig, a short-snouted and a long-snouted one, that has been attributed to the gradation of forms between the local wild pig and the domesticated breed (Abdulali 1962:283), has been discounted by the analysis of pig bones from Chauldari. As mentioned earlier, the size differences observed in this collection can be attributed to differences in age and/or sex, not to the presence of the two breeds.

Although the available evidence does not satisfactorily resolve the question regarding the introduction of the pig, it is interesting to note that one of the common features in the cultural traditions of the Andamans and the Nicobars involves the practice of preserving trophies of the skulls of pigs and turtles, albeit in different socio-religious contexts. To what extent this broad similarity in customs can be attributed to cultural influence has yet to be determined.

Cipriani (1966:75) also suggested, from the Beehive Hill evidence, that 'pottery arrived in the Andamans at the same time as the pig'. Once again, these findings have not been supported by the evidence from Chauldari, where pottery occurs in the lowest layers.

To sum up, the archaeological data do not substantiate the myth which identifies Wot-a-emi as the place that is associated with the origins of the Andaman Islanders. The occurrence of several sites, in the surrounding area, of a similar age suggests that the initial colonization of the Andamans took place more or less simultaneously in a number of islands. Whether this indicates rapid settlement by a large group of people has yet to be determined. Further, a larger number of sites on South Andaman Island need to be dated in order to ascertain whether they are as ancient as the midden at Chauldari and whether the southern islands of the archipelago were the first to be colonized. In this regard, a neighbouring mound (Chauldari II) is only 300 year old (see Table VII.1).

Antiquity of Human Settlement in the Andamans

The Linguistic Evidence

Greenberg (1971) has attempted to place the Andamanese within a putative 'Indo-Pacific' family which would also include most of the non-Austronesian languages of Oceania (Papuan, Tasmanian, etc.). As Greenberg cautions, the very existence of such a family remains hypothetical.

Recently, Burenhult (1996) analysed the structural types and grammatical categories present in the Andamanese languages, tracing their roots to the initial colonization of South-East Asia by modern humans. The validity of this hypothesis, however, needs to be examined through a multidisciplinary approach.

The Out-of-Africa Theory

Dr Erika Hagelberg of the University of Otago in Dunedin, New Zealand claims to have extracted DNA out of forty-two samples of hair from Andamanese individuals, collected in 1907 by Alfred R. Radcliffe-Brown. A short segment of DNA (mtDNA) from the mitochondria was amplified and, to quote Hagelberg in Connor (1998), '[o]ur results indicate that the Andamanese are the descendants of one of the earliest expansions of anatomically modern humans. They appear more closely related to southern African pygmies than to other Asian groups. They are, in effect, the descendants of the earliest migrations of *Homo sapiens* out of Africa'.

While these findings await confirmation through further research, they have generated a debate which considers evidence from regions as far apart as Africa and China, but ignores that from the Indian subcontinent (Mukerjee 1999:24).

To set the record straight, it is well known that the Miocene age Siwalik deposits in northern Pakistan have yielded fossil hominids *Ramapithecus* and *Sivapithecus*, whereas stone tools were recovered from a 2.2 million year old conglomerate horizon within the Siwalik strata of the Soan valley in the Potwar plateau at Riwat (Rendell and Dennell 1987).

Although the authenticity of the artefacts in the Potwar deposits has been questioned (Kennedy 1999:168), in India, tool-bearing

humans first made their appearance as far back as the Middle Pleistocene. For example, Paddayya's (1982; 1985) intensive surveys in the Hunsgi and Baichbal Valleys in south India have yielded a wealth of Acheulian material as well as fossil bone fragments. The latter have been dated by the Th^{230}/U^{234} method, the earliest date being 350,000 BP (Szabo et al. 1990). Similarly, the lower horizon of a fossil sand dune near Didwana, in Rajasthan, containing stone artefacts, has yielded one uncorrected Th^{230}/U^{234} date of 390,000 ±50,000 BP, while the Middle Palaeolithic assemblages from the same site have been dated by the same technique to around 150,000 BP (Raghavan et al. 1989).

Corroborating this evidence is the discovery of a fossil skull-cap from the Narmada Valley alluvial deposits, in association with a rich mammalian fauna and Lower Palaeolithic stone implements dated to *c.*250,000 years ago (Sonakia 1984). The skull-cap has been identified as belonging to an early *Homo sapiens* (Kennedy et al. 1991). If the presence of chopper tools from the Potwar plateau and their dating of *c.*2.2 million years is verified, it would have significant implications for the multiregional model which holds that humans have evolved from populations of *Homo erectus* in different parts of the world one to two million years ago.

The validity of these opposing hypotheses will now be examined on the basis of relevant data from South-East Asia.

The Negrito Hypothesis

The current debate highlights the problem posed by the Andaman Islanders for human biologists for more than a hundred years, a problem of origins and relationships that has not been resolved despite considerable research in many parts of the Indo-Pacific region. Early British commentators speculated that the Andaman Islanders were the descendants of shipwrecked 'negroes' from an Arab or Portuguese slave ship (Symes 1827; Colebrook 1795:389). This idea was abandoned with the advent of what has become known as the Negrito hypothesis, the viability of which depends to a large extent on the identification of the Andamanese as a pristine Negrito population.

When the Spanish first explored the interior of Luzon at the beginning of the seventeenth century they discovered a

black-skinned, frizzy-haired people (Agta), who they named 'Negritos del monte' (Little Negroes of the mountains). It was assumed that these people, and similar looking peoples elsewhere in South-East Asia and the Pacific, had derived from an African homeland. The first craniometric studies (Flower 1880; Owen 1861; Quatrefages 1887) appeared to corroborate this simple and appealing hypothesis. It was thought that the Andamanese, the Agta, the Semang, and even the Tasmanian aborigines, the Vedda, and certain south Indian communities formed a broad Negrito population group. The composition of this group varied according to the authority, obvious physical differences being explained away as the consequence of genetic admixture with other groups.

Thus the 'Negrito race' was delineated and this concept persisted for some time (for instance Cipriani 1966; Birdsell 1977; Cappieri 1970). With others, Birdsell has suggested that small pockets of these Negritos in South-East Asia, and the isolated population in the Andamans, demonstrates the initial dominance of these people in the past.

While the Negrito hypothesis won widespread support, it has also been challenged. To resolve the heated debate in French academic circles, the Ministry of Public Education sent Louis Lapicque (1896) to examine at first hand various South-East Asian peoples. Lapicque's reports in favour of the hypothesis evidently stilled the debate in France. During the 1930s two osteological studies suggested that the Andamanese and the Agta were not significantly different from surrounding populations (Bonin 1931; Woo and Morant 1932). Neither of these studies presented particularly powerful evidence and they are of no value today in resolving the issue.

Nevertheless, many human biologists see small gracile groups in Asia and Oceania as local isolates resulting from specific demographic and adaptive forces in different regions (for example, Howells 1973; Parsons and White 1976; Simmons 1976). This view uses genetic and skeletal data to show that the bulk of the isolates are merely local variants in their own areas, as they display many similarities with surrounding populations. Short stature, gracilized or foetalized skeletal features and other body characteristics are considered to be merely similarities due to similar stresses and adaptations.

In this regard, it may be noted that the average height of the Andamanese, which is reported to be 152.5 cm for men and 137.5 cm for women (Chakraborty 1990:10), closely corresponds with

that of the Semang (males, 153.6 cm; females 142.7 cm) and of the Senoi (males 151.5; females 142.3 cm) (Fox 1995:316). It has been correctly pointed out that, as features such as stature are variable among groups, they cannot be regarded as 'markers' that distinguish populations (Fox 1995:316). This also holds true for the Andaman Islanders, for Guha (1954:130) does not rule out differences in height between different groups of the Onge on Little Andaman Island, whereas Sarkar (1985:192) claims that the Jarawa are on an average taller than the Onge and the Great Andamanese by about 15 cm. The misconception that they are 'pygmies' can be attributed to the racial bias of researchers such as E.H. Man and Cipriani, who deliberately had themselves photographed (Man actually stood next to a scale) with individuals who were considerably shorter than them.

On the basis of the classical ABO system of analysis, Dutta (1983:267) concludes that the Andaman Islanders 'have no affiliation with the Pygmies of Central Africa'; rather, they evince closer affinities with Oceanic populations. This is in concurrence with Bellwood's (1985:74) conclusion that:

> the Australoids are the true aborigines of the Indo-Malaysian Archipelago; they represent a specific race of Homo sapiens native to that region . . . and it should be noted here that there is no skeletal evidence which would give any support to the idea that the peoples of the Indo-Malaysian region were ever all short Negritos. . . . The short stature may be simply a localised independent development.

It is further conjectured that adaptation to a rainforest environment took place during the Holocene, and that short stature may have been acquired 'within this 10,000 year period' (Bellwood 1993:46). This pertains to the Semang of the Peninsula Malaysia, and partly the Senoi, whose Hoabinhian ancestors occupied caves and shelters dating back to the early Holocene. Moreover, the spread of genetic variants from Mainland South-East Asia to Island South-East Asia, commencing perhaps in the Late Pleistocene, is in keeping with a west to east trend for certain cultural traits and faunal distributions (Baer 1995).

The situation is further clarified by Bulbeck's (2000) pioneering study of the dental morphology of the Hoabinhian and Neolithic skeletal remains from Gua Cha, West Malaysia. In a regional comparison of the metrical traits of dental samples, Bulbeck (2000:33) avers that:

the pooled Early Malay Archipelago sample clusters most closely with Andaman Islanders, a group of 'Negritos' living close to the Malay Peninsula. This result parallels the previous demonstration of a craniometric similarity between Andamanese, and West Malaysia's 'Negrito' Semang and non-Negrito Senoi (Bulbeck 1996). We are clearly not dealing with the delineation of a distinct Negrito group, as shown by the incorporation of South Indians and other non-Negrito groups in the selfsame clusters. Moreover, the Gua Cha Hoabinhian teeth specifically resemble Jomon teeth, and the Early Malay Archipelago teeth consistently seriate with the Jomon samples. . . . The Andamanese and Malay Peninsula Aborigines do seem to have stemmed from an earlier tropical Old World population, which was neither specifically Negritoid nor 'Australo-Melanesian', and which had extended as far as prehistoric Japan.

Conclusions

First, the term 'Negrito' is clearly a misnomer with reference to the Andaman Islanders or, for that matter, any population in South-East Asia (Baer 2000). Second, the present scenario is equally supportive of a South Asian or an African homeland for the people of the Andamans. Moreover, since the Hoabinhian culture in Sumatra and Malaysia is not older than 10,000 years, the Andamans may not have been colonized during the last glacial maximum 21,000 years ago, even though lower sea-levels would have considerably reduced the distance between North Andaman Island and southern Burma, which today are separated by less than 300 km. Assuming, however, that human occupation in the Archipelago occurred during the Late Pleistocene, and that older sites were drowned during the drop and rise of the sea level between 30,000 BP and 6000 BP, the resultant destruction of ancient habitational deposits would not have been much, considering that the Andaman–Nicobar ridge is fringed by coral shelves that are only 10–50 km wide west of the islands and less than 10 km wide east of the insular coasts. This, however, does not rule out the possibility that the relatively better preserved deposits in caves and rock shelters could tell a different story, or, for that matter, could raised fossil beaches, such as those of Ritchie's Archipelago.

VIII

An Overview

The surveys have so far brought to light numerous shell middens as well as one cave site, thereby attesting to the existence of human habitation in all the major islands of the Andaman group. For the first time in the history of archaeological work in this Archipelago, it has been possible to obtain a series of radiocarbon dates from a variety of sites and on material ranging from charred shell to organic matter from Hava Beel cave. This constitutes the first step in the elucidation of the origins of the Andaman Islanders. Although the variable preservation of ancient deposits renders it difficult to ascertain the time of the first arrival of humans in the Andamans, the potential of archaeological data in addressing these queries has been clearly indicated, as is the scope for further investigations.

The nature of the Andaman archaeological record has been delineated through the study of the dimensions and ecological correlates of selected sites with reference to the factors that were responsible for their disturbance and destruction. Shell middens have been found to be rich not only in faunal remains, but also in pottery and in artefacts of bone, stone, and shell. In studying each of these components, different avenues of research have been explored, creating, as a result, a database encapsulating insights which should encourage further inquiry.

Thus it has been possible to infer the exploitation of different habitats on the basis of variations in the composition of molluscs, as in the shell mound at Chauldari. Judging by the preponderance of shellfish in the Andaman middens, one would have thought that the primary criterion for successful adaptation to this environment

would be an economy based on coastal resources. However, it is noteworthy that the numerically dominant component of an archaeological site may not accurately represent the quantity of food items that was exploited and processed at that location. Moreover, the relatively long-term occupation of the interior of the islands by a greater majority of the population could well have been in response to the opportunities offered by the environment. Whether this was already known to the first settlers is another intriguing question.

Although the proximity of freshwater is one of the principal determinants of site location, as witnessed by clusters of middens around perennial springs and streams, the study of place names revealed the predominance of plants in the descriptive terminology of the Andaman Islanders. Thus the fundamental criterion for the location of encampments, namely the availability of drinking water, is not reflected in the etymolology of place names, indicating thereby the economic importance of the local flora, and clearly distinguishing between the criteria for the selection of sites and those determining their identification.

The preferential selection of molluscs for cutting and scraping purposes has partially explained the dearth of stone tools. On the other hand, the preliminary analysis of use-wear on flakes and chips suggests that they were often used for scarification and shaving. The relatively recent adoption of glass for this purpose reflects the continuance of technological traditions based on lithic material, a process that has parallels in regions that are not geographically or culturally related.

The textural differences in the Andaman ceramics, as also the temperatures at which the pottery was fired, have been determined by petrological studies and by X-ray diffraction analysis. The degree and direction of change, as discernible in the archaeological record, demonstrate that neither culture, nor the people to which it is ascribed, are static entities, suspended, as it were, in the sands of time. The significance of pottery in a socio-economic context must therefore be considered in regard to the possibilities of silent trade as a means of exchange in the distant past, and the enigmatic origins of different watercraft characteristic of this area. The model of isolation is no longer valid, as too the concept of 'closed' systems associated with island communities. If the Andamans are viewed as stepping stones between Burma and the Nicobars, flanking the

western shores of South-East Asia, then the Islanders must be regarded as active players in the arena of the Andaman Sea wherein lay adequate scope for the adoption and rejection of ideas and innovations. Despite being victims of slave raiders and other marauders, the Islanders were, by and large, able to keep strangers at bay and, when the occasion arose, were able to interact with them.

The observations of abandoned Onge encampments on Little Andaman Island have considerably enhanced our understanding of the functional attributes of midden deposits, as also the factors determining their preservation and disturbance. In this regard, it has been found that the location and internal stucture of a camp are determined by group size, intended duration of stay, social organization, and economic activities, in addition to certain environmental constraints. In a tropical environment, transient camps would disappear within a short time and leave no traces of their existence. Such sites would be characterized by a simple lean-to or a platform on which meat is smoked. On the other hand, the locations of semi-permanent encampments, which are occupied during the monsoon and winter, would be determined by the availability of freshwater, adequate shade as well as the direction of the prevailing winds. Of course, accessibility to different food resources would also be taken into consideration. While all perishable material would eventually disappear in an exposed context, some of it may be preserved within the sealed deposits of limestone caves such as Hava Beel on Baratang Island.

Given the archaeologist's obsession with time and change, it is convenient to overlook the world view of those to whom piles of bone and stone may constitute residues of collective experiences, as discussed in Chapter V. This perspective may be as pertinent to ongoing inquiries as conventional approaches claim to be.

In respect of subsistence strategies, I have questioned the appropriateness of the forager/collector model as proposed by Binford. It has been argued that the inland population in the Andamans may be identified as collectors, while the more mobile coastal groups would more closely fit the forager model. While both these organizational strategies seem to be incorporated in local subsistence patterns, it is important to note that shell middens, which may be defined as 'coarse-grained' archaeological deposits, in keeping with low mobility, are associated with the mobile coast

dwellers as well as with the relatively sedentary inhabitants of the forests. Moreover, the criterion of storage in categorizing economies has to be carefully assessed with reference to ecological, social, and demographic factors. In short, the remnants of the past in the Andaman Islands represent the dynamic interaction of traditions within and outside the Archipelago, a process that spans at least two millennia.

I conclude on a note of concern for the large-scale exploitation of middens as sources of raw material for the manufacture of lime, to which attention was drawn in Chapter III. If such activities cannot be stopped, then, for all practical purposes, archaeological projects undertaken in future must grant priority to the survey of endangered sites and the carrying out of salvage excavations wherever possible.

Appendix I

Museums Outside India Holding Collections from the Andaman Islands

Anyone interested in the Andamans would be amazed at the wealth of material that reposes in museums in Europe and the USA.* The list provided below is confined to the museums that were visited by me, although the museums of the Anthropological Survey of India at Calcutta and Port Blair are equally important.

The bulk of the artefacts are in the United Kingdom, as the collectors belonged mostly to the administrative cadre of the penal settlement. Like their contemporaries elsewhere, they were largely motivated by the need to thoroughly apprehend the cultural material of peoples under the colonial yoke in order to facilitate control over them. The relentless pursuit. of this goal subsumed the virtual annihilation of the indigenous population, a process that occurred concurrently with the mass transportation overseas of practically every aspect of the Islanders' lives, including skeletal material. Much of this was obtained through 'punitive' raids conducted against the Jarawa and the Onge.

In the literature associated with various museum collections, scattered over three continents, the name that crops up most frequently is that of E.H. Man who, during his long stint in the Andamans (1869–1901), rose from third to first assistant to the penal settlement and ultimately to the position of deputy superintendent. He assiduously collected items of material culture,

*I thank these museums for permitting me to see their collections.

describing them in meticulous, though somewhat dry, detail. In ensuring the availability of samples of each artefact type, Man seems to have set himself the task of supplying every major museum in the West with representative samples from the Andamans. In so doing, he determined what should be collected, as also how it should be identified and categorized. By colonial standards, Man epitomized the ideal officer of the Raj (see Prain's [n.d.] memoir of Man as well as that of his father, Lieutenant Colonel Henry Man).

The photographic archives in the museums listed below are as interesting as the objects they complement, and therefore deserve special attention. In terms of content and organization, the collections in the USA bear a strong British influence, given their contemporaneity with the colonial regime. However, the American donors represent individuals with a more varied background, reflecting as they do, along with their British counterparts, the 'scientific temper' of the early part of the last century. These attitudes undoubtedly shaped the foundations of anthropology in the West, and were largely responsible for the racial connotations that were integral to the early theoretical structure of this discipline.

Museum Collections in the United Kingdom

Object Collections

1. Museum of Mankind, London:

(a) Collection of ninety-three objects by R.C. Temple—handwritten and illustrated register (Catalogue order 905966, Dept Reg., vol. I, 1861–8; 1903–7).

(b) Objects from the Andaman Islands presented by M.V. Portman (1886, British Museum, Dept of Ethnography)—catalogue (envelope no. 1774). Note (1 November 1973) regarding this catalogue by Fiona Graham, former Assistant Director of the Museum: 'Found that Portman Catalogue 1886 appears to be word for word copy of E.H. Man collection catalogue given to Pitt Rivers 1878. . . . Probably later collection made by M.V. Portman to correspond with this. Handwritten additions to catalogue thought to be by Portman. . . .'

(c) Bibliography on the Andaman and Nicobar Islands.

(d) Ethnographic document (no. 1714) by Mrs W.H. Burt (1933). This lady

found the Islands extremely interesting; they might have come straight out of Gilbert and Sullivan opera! . . . The only respectable people are the convicts: the free people as a rule, are very depraved, which is not surprising, as they are the children of marriages arranged in the prison marriage market.

The Andamanese themselves are most interesting little people; it is said that they are rapidly dying out, but unfortunately as in other cases, civilization [sic] means extermination to the native race . . . [Nothing sums up the attitude of the British as adquately as this sentence].

(e) British Museum, Department of Ethnography. Storehouse at Orsman Row, London—collections from the Andaman, Lacadive and Nicobar Islands made by E.H. Man, M.V. Portman, R.C. Temple, and others. These are listed in the location codes project, dated 21 February 1986, 59 pages.

2. (a) *The Temple collection*. Catalogue of a collection of the manufactures of the Andaman Islanders presented by Sir R.C. Temple, Chief Commissioner and Superintendent of the Andaman and Nicobar Islands, 1892. From the Seventeenth Annual Report of the Antiquarian Committee, 1902. Museum of Archaeology and Ethnology, University of Cambridge. A footnote says that 'for fuller particulars see *The Aboriginal Inhabitants of the Andaman Islanders* by E.H. Man, London (1883)'. The items are divided under eleven headings: (i) dress, ornaments, etc.; (ii) materials; (iii) furniture and utensils; (iv) tools and implements; (v) musical instrument; (vi) cults of the dead; (vii) medicine, pigments, etc.; (viii) horticulture; (ix) hunting; (x) canoes and fishing; and (xi) hair.

(b) Catalogue of a collection of the manufactures of the Nicobar Islanders presented by E.H. Man, late Superintendent of the Andaman Islands, 1892. From the Seventeenth Annual Report of the Antiquarian Committee, 1902. Museum of Archaeology and Ethnology, University of Cambridge.

3. Horniman Museum and Library, London. They have the Protheroe collection (1908) and a small collection from A.R. Radcliffe-Brown.

4. Pitt Rivers Museum, Oxford—some 500 pieces of Andamanese material, many of which were provided by E.H. Man.

5. Royal Museum of Scotland, Edinburgh—material from the Andamans presented by T.R. Buchanan, E.H. Man, and Col. Cadell.

Photographic Collections

1. Royal Anthropological Institute Photographic Collection, 56 Queen Anne Street, London WIM 9LA. Andaman and Nicobar Islands (KWYE)—the number of items in each category is indicated in brackets after each section. Negatives are held for these images.
   - Landscapes/individual portraits/groups and village scenes by E. H. Man, *c.*1870s–1880s (192).
   - Andaman adze and bow manufacture by M.V. Portman, *c.*1893 (26). According to Pinney (1990:271), 'The depiction of technology found its greatest elaboration in the work of M.V. Portman of the Port Blair penal institution. Eleven large albums of photographs made in 1887–1894 picture stages in the manufacture of Andamanese material culture and are accompanied by meticulous details of each stage.'
   - Portraits of Andamanese living in the vicinity of Port Blair by Dobson, 1872 (6)
   - Coastal scenes, Nicobars, by Rogers (4).
2. The Pitt Rivers Museum, Oxford, has two 35 mm, black and white films on the Andamans taken by Suydam Cutting, most probably before 1932 (index card nos. X 98 and IX 132). In Chapter 7 of Mr Cutting's book *The Fireox and Other Years*, published in London in 1947, he describes his visit to the Andaman Islands.

Reel 1: Scenery; physical types; dances; launching canoe; fishing with spear, bow and net; basket-making; hair-dressing; string-making; making dug-out canoe;. canoes being paddled, poled, and towed by launch.

Reel 2: Harpooning from canoe; bringing in a dugout; cutting up dugong; boys playing in the sea; pulling in, cutting up, cleaning and eating turtle; turtle dance; going off in canoe.

3. Horniman Museum and Library, London—two albums of photographs taken by an official of the prison service there.

Museum Collections in the USA

1. The Alfred Reginald Radcliffe-Brown collection, Field Museum of Natural History, Chicago.

One of the best preserved collections in this country is that of A.R. Radcliffe-Brown. Over 300 objects have been listed, dating back to 1914, although the exact number is likely to have been less owing to the individual listing of various accessories. There appears to be some confusion in this regard, as also with respect to the approximately 130 items donated by R.C. Temple (dated 1892). Miscellaneous items were given by K. Todd. The nature of the material and the manner in which it is grouped are similar to the collections in the United Kingdom. Of interest are four pots in good condition and several clay samples. These and other artefacts would be well worth analysing in detail. The samples from the Nicobar Islands, which form a smaller group, were gifted by Radcliffe-Brown as well as E.H. Man.

The Field Museum also has an interesting metal sculpture of an 'Andamanese with South Andaman bow' (!) made by Malvina Hoffman. I am uncertain of the date.

Given below are extracts from Fortes' (1956) memoir of Alfred Reginald Radcliffe-Brown:

Professor A.R. Radcliffe-Brown, Emeritus Professor of Social Anthropology in the University of Oxford and formerly Fellow of All Souls College, died in London on 24 October, 1955, in his seventy-fifth year.

In 1906 Radcliffe-Brown went to the Andaman Islands as Anthony Wilkin Student in Ethnology. He returned in 1908 and was elected to the Fellowship at Trinity College. . . . His Fellowship thesis was the first draft of what later became *The Andaman Islanders*. It was mainly descriptive, including in particular the account of Andamanese technology that is printed as an appendix to the book. At this stage he was still following closely the methods of his teachers, (A.C.) Haddon and (W.H.R.) Rivers.

Back in England in 1913, Radcliffe-Brown completed his revision of *The Andaman Islanders*, but owing to the outbreak of the First World War it was not published until 1922.

In 1931 Radcliffe-Brown went to the University of Chicago. His career there is best described in the words of his closest friends and pupils of that period, Professors Lloyd Warner and Fred Eggan, from whose obituary memoir in the *American Anthropologist* (Vol. LVIII, Part 3, 1956, pp. 544–6) I quote. 'For the first time in many years,' they say, 'he had no administrative burdens and greater leisure to write and teach. He renewed his earlier acquaintance with American Indian social organization, developed his conceptions of primitive law and social sanctions, and laid the framework for the modern treatment of the lineage.'

But his stay in Chicago was short. In 1937 he returned to England to take up the newly created chair of Social Anthropology at Oxford. Here he was in his element.

What is sometimes called the 'British school' of post-war social anthropology gained its chief impetus from Radcliffe-Brown during this period. He came to Oxford at a critical moment in British social anthropology.

2. The National Museum of Natural History, Smithsonian Institution, Washington, D.C.

(a) William Louis Abbott (1860–1936)

In 1899, Dr William Louis Abbott, a publicity-shy millionaire from Philadelphia and an avid Malayophile, embarked on a ten-year voyage to South-East Asia. He sailed in the schooner 'Terrapin', indulging his love for the East entirely at his own expense. By the end of his journey he was richer by over 6000 artefacts, numerous photographs, and specimens of the tropical fauna. All these, together with relevant archival material, were gifted to the National Museum of Natural History (formerly the US National Museum), which probably makes Abbott one of the largest single contributors to this institution; here was a man who was trained in medicine, but never had to practise it! (Taylor 1985).

In January 1901, Abbott, accompanied by C. Boden Kloss (1903), visited the Andaman and Nicobar Islands. Although the collection from the Andamans (mostly from Rutland Island and Little Andaman) is relatively small (about 130 pieces), the encounter with the Andamanese of Rutland Island provides an amusing lesson in the diplomacy of barter.

> By signs, we gave the men to understand that we wished to purchase bows and arrows, and while these were being produced from some hiding-place in the jungle, whither the natives requested us not to accompany them, the women and children regaled themselves with a parcel of sugar which had been brought for their special benefit.
>
> We eagerly bought up all visible belongings that could be carried off. Among these were small pots made from the joints of the giant bamboo, conical baskets of rattan fibre, and large buckets carved from solid wood, any cracks being sewn up with rattan and luted with wad; all these were furnished with slings for ease in carrying. [Kloss 1903:33]

Subsequently, Safford (1902), in consultation with E.H. Man, described these articles under the familiar categories of food, body painting, etc. Later, Mason (1908) analysed Malaysian basketwork

on the basis of Abbott's collections, and incorporated the Andaman baskets in his study.

(b) Enrico Hillyer Giglioli

The Abbott collection from the Andamans is complemented by 134 artefacts procured 'through H.H. Giglioli, Royal Museum, Florence', as typed on the accession cards of the former US National Museum. In addition, printed cards mention 'from the E.H. Man Collection, Royal Museum, Florence, Italy', which explains the source of the collection, as do some of the descriptions embellished by quotes from Man's work on the Andamans. In 1901, a few items were sent to the Field Museum of Natural History, Chicago, on an exchange basis, thus indicating that the material was procured some time prior to this, and is roughly contemporary with that of Abbott.

To understand how Man came into the picture, one has to go back to 1869 when Giglioli began teaching zoology at the Institute of Superior Studies in Florence, and built up an exemplary collection of Italian vertebrates. His ethnographic collection grew by chance out of a gift of arms and apparel of the people of Formosa given to him by the explorer of the island, his friend Robert Swinhoe. Other items were added to these through purchases and gifts from colleagues in Australia and other places. In 1863, Giglioli went about reorganizing his collection according to the evolutionary hypothesis of the period, i.e. through a comparison with modern 'savages'. In the pursuit of this goal, he corresponded with colleagues from all over the world, including Man, and exchanged material and information with major ethnographic museums (see *Archivo per L'Antrpologia a la Etnologia*, vol. 21, pp. 410–587; 1891, and *La Collezione Etnografica Del Prof. Enrico Hillyer Giglioli, Geograficamente Classificata*, vol. II [1912], Antico e Nuovo Continente. Florence: Citta di Castello). The items from the Andamans and Nicobars constitute a relatively small part of Giglioli's ethnographic collection, which is said to number over 17,000 specimens and 10,000 photographs! Much of this is now housed in the Museo Preistorico ed Etnografico (Luigi Pigorini), Rome.

3. The C. Anderson collection in the American Museum of Natural History, New York.

A typewritten note (no. 70.0/540–790, dated 15 September 1961) in the museum archives gives the following information:

> The largest Andaman collection, sent in by C. Anderson, was made just about the time that Radcliffe-Brown was making his study in the area. This

was 1906–8. There is a catalogue in the accession envelope with information that is very close to what Brown later published.

Anderson was at the time Asst. Supt. at Port Blair. His catalogue lists the native names of the objects in Akabia dialect (Brown's Aka Bia) and from this I would conclude that the material is all Middle and South Andaman unless otherwise specified. (There are small lots of North A. and Little A. material. Nothing from the Jarawa.)

The 250 pieces group themselves into seven main categories, all with good representation:

1. Hunting and fishing
2. Cooking
3. Wearing apparel
4. Decoration
5. Tools
6. Raw materials
7. Misc. and models

A possible eighth category could be put together (religion and spiritual life) by drawing from the wearing apparel and the raw materials and the misc.

Beside the native name, the catalogue specifies some details of use or manufacture in almost every case.

Of particular interest are black-and-white photographs of the Andamanese (they have obviously been made to pose in a manner that is supposed to represent different activities) described in Anderson's own handwriting. For example, one of the photos is identified as:

> A chief and his sub-chiefs in council. The chief is the central figure with a pig spear in his hand. Note the white clay painting on his person. The Andamanese believe that after eating pig or turtle, evil spirits are attracted by the savoury [sic] smell imparted to their breath and the white clay smeared on their bodies neutralizes this and so guards them against the evil effects that would surely arise from such visitors. The designs in painting indicate whether pig or turtle was the fare partaken of.

4. Peabody Museum, Harvard University.

In 1927, the museum purchased an assortment of items, belonging to the Andamans, from J.F.G. Umlauff, Volkerkundliches Institut und Museum, Hamburg, Germany. The funds were provided by H.F. Wolcott. A list typed in German indicates 143 specimens, although an accession card of the Peabody Museum mentions 156. Apparently there are duplicates as well as accessories of some artefacts, which include bark belts, shells and stone, barbed point

on cord, sleeping mats, arrow, fish spears, baskets, and wooden buckets. However, 'pig skulls worn on arms' is an obvious mistake.

Museum Collections in Dresden and Leipzig

1. State Museum of Ethnography, Dresden.

A published catalogue (Icke-Schwalbe 1986) illustrates some of the 132 objects of the Great Andamanese. Most of these (eighty specimens) were gifted to the State Museum of Ethnography (formerly the Royal Museum of Zoology, Ethnology and Anthropology) in 1904, by Viscount Gough, the British resident in the former state of Saxonia. In 1929, additional items were obtained through the Museum of Hygiene in Dresden, which had earlier procured them from the business house of Umlauff in Hamburg (the same source for the collection in the Peabody Museum, Harvard). Prior to this, private collectors such as Wroblewsky and Dr Uhle had brought Andamanese memorabilia to Dresden. The Gough donation compares well with the list compiled by Man (Fox 1878), and was probably assembled during the latter's tenure in the Andamans.

2. Museum of Ethnography, Leipzig.

Egon von Eickstedt toured the Andamans from November 1927 to January 1928, and was the first European physical anthropologist to explore Little Andaman Island (Eickstedt 1928, 1929, and 1930). He took 706 photographs and measured 145 individuals in an attempt to identify phylogenetic traits. In addition to collecting samples of blood and hair as well as some skulls, Eickstedt excavated the skeletal remains of the last member of the Akabia group. The 204 items of ethnographic interest in the Leipzig museum are representative of the Onge, the Jarawa, and the people of South Andaman Island.

Specimens from the Nicobars were acquired from E.H. Man in 1901, through the London trading house of Webster. In fact, from 1891 to 1901, Man was in regular correspondence with Dr Obst, the Director of the Leipzig Museum. A catalogue in German presents colour as well as black-and-white photographs of samples collected by Gough, Man, and Eickstedt, with background information on the communities concerned (Icke-Schwalbe and Günther 1991).

Appendix II

Whither the Andaman Islanders?

Having met the Onge and having briefly visited the Great Andamanese and the Jarawa, I would like to record here what I learned which reflects the desperately precarious situation in which these groups, including the Sentinalese, find themselves today. Although this section may seem more appropriate in another forum, I feel it is time to acknowledge that what one learns from the past could have wider implications in making decisions that shape the future of our own countrymen. This brings to mind Matthew Spriggs' (1997: 285) observation, in relation to the Island Melanesians, that 'One of the tragedies of the development process is that this [Island] history remains largely unrecognized, and what people don't know can harm them.'

This also applies to the Andamans where the archaeological record bears silent witness to a system of human adaptation, which flourished for over two millennia. When the Great Andamanese, the Jarawa, the Sentinalese, and the Onge are viewed in this light, the technological knowledge of urban systems such as ours seems ill equipped to render advice on the 'development' of these Islanders. Rather, our concern for their survival should be motivated by deep respect and regard for their way of life which, in turn, merits unstinted efforts on our part to enhance our understanding of their unique mode of settlement. It is only by doing so that we can undertake the delicate task of enabling them to overcome the hazards that threaten their very existence. Such an approach entails continuous feedback in the form of active participation by the Islanders themselves.

The Dwindling Population

It has been postulated that the process of involution brought about by 'the hyperfractioning of the scarce population [of the Andamanese] into closed cells' hastened the decline of numbers (Cappieri 1954:297). In this regard, it is possible that the fragmentation of Andamanese society into small nuclei weakened the stability of the demographic composition and in turn may have altered the sex–age ratios considerably. It is perhaps this factor and the concomitant lack of immunity that enhanced the vulnerability of the indigenous population in the face of the major epidemics that swept through these islands in the last century. This view is supported by Ganguly and Danda (1989:134).

It has also been argued that the rapid spread of disease was caused by the Andamanese custom of adopting children, for, infected children from the notorious 'orphanage' at Port Blair soon communicated their illnesses to the families who adopted them (Myka 1995).

Furthermore, estimates of Andaman fertility rates suggest a low value, in that census figures represent a major decrease in fertility over time, the declining percentage of children being as follows: 20.8 per cent in 1901, 21.1 per cent in 1911, 17.7 per cent in 1921, 14.9 per cent in 1931 (Cappieri 1954:296). In 1972, a government-sponsored investigation revealed that infant and child mortality among the Onge was 40 per cent and that 42 per cent of the women were sterile. The low fertility may partially be explained by factors that are often found to limit hunter-gatherer population levels, i.e. delayed weaning and hence increased child spacing, as also delayed puberty. In this connection, it may be noted that Andamanese women did not attain puberty till the age of 15 (Man 1932:11). Other factors would include the moderately high age of marriage, 18 to 22 for men and 16 to 20 for women, and an average of three or four births per mother (Man 1932:13).

Nag (1968:146) has indicated that venereal disease could be 'one of the major reasons for high incidence of sterility in a society.' This seems to have been the case in some of the Pacific Islands, where there was a rise in mortality on account of introduced diseases such as measles and influenza, with a simultaneous fall in fertility due to the occurrence of venereal diseases (Pirrie 1971:4). Similar infections played a major role in the decline of the Andamanese population.

Of late, high levels of Hepatitis B infection have been detected among the Nicobarese as well as among the existing groups of Andaman Islanders. 'The prevalence rate among the Shompen was found to be the highest with 37.8 per cent. It was 31 per cent among the Onge and a low 3.7 per cent among the Great Andamanese' (Ramachandran 2000:86). It is hoped that growing awareness of this problem prompts the government to initiate a large-scale effort towards immunization.

In contrast to the fate of the Andaman Islanders after 1858, the Nicobar Islands were relatively unaffected by the penal colony established there by the British in 1869. The reason for this may lie in the essentially agrarian economic base, which is supported by a system of trade that promoted inter-island contact. In the past, communications extended to Burma, Malaysia, and Sumatra from where much of the Nicobarese population seems to have originated. Although it is uncertain whether this factor permitted a continuous growth in population, in spite of widespread prevalence of venereal diseases, the

> demographic data from Pitcairn and Tristan da Cunha and also from the isolated islands of the Furneaux group in Bass Strait, between Australia and Tasmania, suggests that an island population with simple horticultural techniques may double its numbers in each generaton as long as additional land and resources continue to be readily available. [Vayda and Rappaport 1963:137]

At present, the four surviving groups in the Andamans represent different stages of biological and cultural reaction to the impact of colonization, controlled largely by the degree to which external contact has been felt. Thus, in order of least affected population, we have the Sentinalese, the Jarawa, the Onge, and the Great Andamanese. As the time and effects of contact for each group vary and as the demographic history of each population follows a unique course, it is imperative that future policies in relation to individual groups are structured to accommodate these factors. This approach involves the unbiased assessment of the most urgent needs of each group, in concurrence with representative members of the communities concerned, and encouragement to fulfil their own requirements in a comprehensive self-help programme. Such a scheme involves the cooperation of welfare and administrative agencies which will constitute resource pools of help and advice

without imposing their own ideas or impinging upon the privacy and daily affairs of the Islanders; circumstances that call for any form of intervention must be handled with extreme discretion and with the willing cooperation of those concerned. Needless to add, the success of such an approach would depend entirely upon responsible personnel who are specially trained for this purpose, and who possess the required sensitivity to inspire trust and goodwill among people, while ensuring their health and well-being.

The Great Andamanese

The once strong, independent, and healthy Great Andamanese are today confined to a reserve on Strait Island and survive on doles given by the government. The continued addiction of the Great Andamanese to liquor is compounded by all too frequent trips to Port Blair and unguided contact with outsiders. Moreover, as Mr Awaradi has observed in his 'masterplan' for the tribes of the Andaman and Nicobar Islands, the marriage alliances between the Great Andamanese and members of other communities have had 'undesirable results' (Awaradi 1990:237).

Equally alarming is the fact that drastic population reduction has changed the genetic constitution of this group, as reflected in the ABO and MNS blood group frequencies, which were estimated by Dutta (1983:265), who concluded that the Great Andamanese may soon become extinct. The current predicament of the few survivors should therefore be treated on a priority basis. Once again, this does not imply the introduction of elaborately different measures that might cause further psychological and cultural disruptions, but a scheme that involves close consultations with the people concerned—in this case women and children as well.

The Onge

My acquaintance with the Onge of South Bay, in Little Andaman, provided an opportunity to discuss various issues with members of their group. These interviews, together with relevant enquiries, form the basis of the following suggestions, which are practical in nature and are in keeping with the approach advocated herein. It must be made clear, however, that the opinions expressed in this

connection do not presume to provide clear-cut solutions to the numerous problems faced by the people of the Andaman and Nicobar Islands.

In 1986, the Onge band at South Bay comprised approximately twenty-two individuals. In 1992 there were only 9 men, 5 women, and 2 children. Most of them suffer from pulmonary diseases as well as from frequent attacks of dysentery and malaria. According to them, lack of timely medical help often results in loss of life. This situation is compounded by inadequate means of communication with the island headquarters at Hut Bay and infrequent visits to their camp by medical officers. The few bicycles possessed by the Onge are quite ineffective in negotiating the 20 km long dirt track leading to Hut Bay, especially during the torrential monsoon rains.

Further loss of life can be prevented by providing a few Onge with training in first-aid and in the treatment of diseases with which they are most commonly afflicted. In this regard, it is interesting to note that several Onge men have expressed their willingness to undergo basic medical training. A specially designed course catering to their requirements should go a long way in ameliorating the present situation. This approach has apparently met with great success in the Nicobar Islands where trained Nicobarese medical compounders and nurses attend to their own people. The efficacy of such a programme in Little Andaman can be enhanced by regular visits by medical officers to the two principal Onge camps, i.e. in Dugong Creek and South Bay. Furthermore, the South Bay Onge (if any of them have survived the conditions that have taken such a heavy toll of life during the last decade) can be provided with more efficient modes of transport, in addition to access to the wireless system now available at the nearby lighthouse. This would enable them to contact Hut Bay or Port Blair in case of emergencies.

These are but a few practical ways of tackling the various problems confronting the Onge. In this regard, it would be well to heed Mann's (1976:47) words that the 'disorganization of their [Onges'] social life, promoting loss of interest in life, remains to be controlled'. This includes the psychological shock from which the surviving Andaman Islanders have yet to be spared (Mann 1976).

The detrimental effects of dietary change should also be taken into consideration, for it is apparent that a forager economy is ill suited to a sudden change to an economy that incorporates alien food items such as flour, rice, and oil. A study of nutritional factors

should be combined with an investigation into the causes of death among the Onge in relation to figures of age, sex, and individual medical histories. The urgency of undertaking such enquiries is highlighted by the sharp fall in the number of Onge from 672 in 1901 to 98 in 1985.

In 1977, large tracts of land on the over 700 sq. km island of Little Andaman were allotted to settlers and the Forest Development Corporation. Subsequently, the Onge were confined to a reserve of 110 sq. km. The tremendous loss of territory and freedom of movement must surely have had adverse repercussions on the demographic structure of the community in terms of weakening their biological resistance to diseases, and rendering them practically incapable of coping with major dietary changes and the curtailment of their semi-nomadic lifestyle.

Chapter V illustrated that, among the Andaman Islanders, territory did not (and does not) merely denote a surface area, but a landscape traversed by sites and paths. To argue, therefore, that usurpation of land is justified because

> hunters and gatherers who merely wandered over it [the land] in foraging for food had no more rights to it than the wild animals that did the same . . . is invalid, for the simple reason that sites derive their identity and significance from their position with the total country. Cut out the country, leaving the site high and dry as an enclosed island, and it is no longer somewhere but nowhere, and thus utterly devoid of content. *To take away a country is to extinguish the sites that enfold the country*. [Ingold 1986:157] (emphasis added)

The Jarawa

Ironically, it is the defensive hostility of the Jarawa that has enabled them to survive so far. The reasons for their defensive stance have already been well analysed (see Mann 1976; Awaradi 1990), so they need not be discussed here. What is important is their continued survival without being subjected to the pressures that have pushed the Onge and the Great Andamanese to the brink of extinction.

As a first step towards this goal, the present practice of gift dropping ought to be thoroughly reviewed, for the vicious cycle thus initiated has only resulted in a growing dependence upon introduced material. Today, the very administrators who mindlessly sought to 'civilize' the Jarawa are faced with the problem of the latter seeking food from settlers. Apparently, it is not hunger that has prompted

them to do this, for they look healthy and well-fed; rather, it is reportedly their desire to satisfy their curiosity about the outside world that has impelled them to venture out of the forest (Acharya and Datta 1998; Sekhsaria 1998). The administration, with an eye on the prime forest land occupied by the Jarawa, has ignored Awaradi's (1990:182) suggestion of creating a buffer zone in order to curtail incursions by settlers and vice versa.

The provision of cultivated plants, if deemed necessary, must be undertaken with a view to reducing the Jarawas' dependence upon neighbouring settlements, and not with the purpose of changing the local economy to an agricultural system. In fact, traditional subsistence patterns, which have hitherto successfully sustained and protected the local population against aggressively intrusive elements, must in all cases be nurtured and encouraged.

Conclusion

The argument against imposing horticulture and a settled lifestyle may best be upheld by citing the demographic implications of villagization in a Semang population in Peninsular Malaysia (Gomes 1990). In this case,

> villagization, instead of improving the health conditions among the Semang as intended, has actually resulted in the deterioration of these conditions allowing disease pathogens to be disseminated more easily. The Rual Semang, unlike the past, are now localised in a village with relatively higher population density resulting in much crowding. It is a widely accepted fact that the higher the population density the greater the chance that disease micro-organisms will make a successful transfer from host to host. [Gomes 1990:135]

The investigator goes on to say that had the Rual Semang been allowed to continue living as foragers in their own territories, they would have 'maintained a good nutritional substratum . . . and would have secured an adequate supply of animal protein of high quality through their hunting and fishing' (Gomes 1990:135). Instead,

> extensive land clearing by new Malay settlers of the surrounding forests . . . has driven off potential game and reduced the fish population in the rivers. Nowadays the Semang consume market purchased food such as rice, dried fish and tinned food. Since the protein foods offered for sale are relatively expensive, Semang can seldom afford to buy them. As a result,

their present diet is usually low in protein but high in starch which in turn results in the prevalence of an unbalanced immunochemical system among the Semang. [Gomes 1990:136]

As a consequence, the 'people had to pay a high price of losing their children to fatal disease for this kind of sponsored development. The demographic patterns, especially the abnormally high mortality associated with villagization, . . .suggest that the Semang are clearly ill adapted to villagization, (Gomes 1990:136).

Furthermore, Dunn (1968), in his survey of the general health, disease, nutrition, and cause of mortality among the Kalahari Bushmen, the Australian Aborigines, the Eskimo, the African Pygmy, and the Semang, suggests that the apparently better diet of these groups relative to most farming peoples makes them less susceptible to disease, concomitantly lowering their death rates.

These observations serve to reinforce the view that it would be best to leave the Sentinalese alone, especially as past and present policies have manifestly failed to prevent the continued depopulation and suffering of the Andaman Islanders who are in contact with the administration. It is hoped that further attempts at contact and all encroachment on the lands of the surviving Islanders would be stopped until policies with regard to these groups have been made effective in securing enduring rights as the essential prerequisite for ensuring their survival, health, and well-being.

In 1991, I participated in a workshop on 'Tribal Development Administration' held at Port Blair under the auspices of the Tribal Welfare Department in the Andamans. The purpose of this exercise was to review the current situation pertaining to the four surviving groups of Andaman Islanders in order to effect appropriate changes in the existing welfare programme. It is unfortunate that among the seventeen participants of the workshop, I was the only one who insisted on including in the discussions members of the various groups who were the focus of this meeting. After some persuasion, the workshop participants condescendingly permitted a few Onge to voice their opinions. Needless to add, their suggestions were neither incorporated in the list of recommendations that were subsequently drawn up nor was it deemed necessary to restructure future policies in consultation with representatives of either the Onge or the Great Andamanese. This instance underscores one of the primary reasons for the failure of 'tribal' policies, resulting in the growing isolation of various groups.

Learning from different cultures assumes special relevance at a time when alternate modes of development are being looked at. Admittedly, traditional modes of subsistence may not be profitable in terms of a capitalist economy, but they certainly foster self-reliance, and the Andaman Islanders 'are much better placed to develop and carry out sustainable management schemes in forests because of their attachment to the land and their indigenous knowledge systems' (Stiles 1993:163). Although Stiles is referring to the Bhils of western India, his observations are equally relevant to the situation in the Andamans.

Once again, this does not imply that marginalized societies should be denied the fruits of modern science. Rather a more rational scheme should be evolved that does not increase dependency, but which learns from the past in a manner which generates self-reliance, enhances the conservation of resources, and is sustainable. Ultimately, however, it is the people themselves who will have to determine their own destiny, each community charting its own course or joining forces with others to secure a better future.

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Zarine Cooper, an archaeologist based in Pune, India, is a former Homi Bhabha Fellow, and the author of *Prehistory of the Chitrakot Falls, Central India* (1997) and co-author of *Bastar Folk Art* (1999).

Jacket photographs: (top) Onge communal hut in South Bay, Little Andaman Island; (bottom) Southern part of occupied Onge camp, South Bay.

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